

10500240

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SEQUENCE LISTING

<110> GLYCOFI, INC.

<120> METHODS TO ENGINEER MAMMALIAN-TYPE CARBOHYDRATE
STRUCTURES

<130> GFI/102 PCT

<140> PCT/US02/41510

<141> 2002-12-24

<150> 60/344,169

<151> 2001-12-27

<160> 106

<170> PatentIn Ver. 2.1

<210> 1

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 1

ggtgttttgt tttctagatc tttgcaytay cartt

35

<210> 2

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 2

agaatttggg gggtaagaat tccarcacca ytcrtg

36

<210> 3

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 3

cctaagctgg tatgcgttct ctttgcata tc

32

<210> 4

<211> 30

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 4
gcggcataaaa caataataga tgctataaaag 30

<210> 5
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 5
aattaaacctt cactaaaggg 20

<210> 6
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 6
gtaatacgcac tcactatagg gc 22

<210> 7
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 7
ccacatcatc cgtgctacat atag 24

<210> 8
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 8
acgaggcaag ctaaacagat ctcgaagtat cgagggttat ccag 44

<210> 9
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 9
ccatccagtg tcgaaaacga gccaatggtt catgtctata aatc 44

<210> 10
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 10
agcctcagcg ccaacaagcg atgg 24

<210> 11
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 11
ctggataacc ctcgataactt cgagatctgt ttagcttgcc tcgt 44

<210> 12
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 12
gatttataga catgaaccat tggctcgaaa tcgacactgg atgg 44

<210> 13
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 13
atcctttacc gatgctgtat 20

<210> 14
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 14
ataaacagtat gtgttacacg cgtgttag

27

<210> 15
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 15
tcctggcgcg ccttcccggag agaactggcc tccctc

36

<210> 16
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 16
aattaatcaa cccttagccct ccgctgtatc caacttg

37

<210> 17
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 17
aatgagatga ggctccgcaa tggaactg

28

<210> 18
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 18
ctgattgctt atcaacgaga attccttg 28

<210> 19
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 19
tgttggtttc tcagatgatc agttggtg 28

<210> 20
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 20
agagagagat ggctttcttt tctccctgg 29

<210> 21
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 21
aaatcaagtg gatgaaggac atgtggc 27

<210> 22
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 22
agcgatgcta taggcagtct ttgcagag 28

<210> 23
<211> 4
<212> PRT
<213> *Saccharomyces cerevisiae*

<400> 23
 His Asp Glu Leu
 1

<210> 24
 <211> 458
 <212> PRT
 <213> *Saccharomyces cerevisiae*

<220>
 <221> MOD_RES
 <222> (304)..(318)
 <223> Variable amino acid

<220>
 <221> MOD_RES
 <222> (416)..(436)
 <223> Variable amino acid

<400> 24
 Met Glu Gly Glu Gln Ser Pro Gln Gly Glu Lys Ser Leu Gln Arg Lys
 1 5 10 15

Gln Phe Val Arg Pro Pro Leu Asp Leu Trp Gln Asp Leu Lys Asp Gly
 20 25 30

Val Arg Tyr Val Ile Phe Asp Cys Arg Ala Asn Leu Ile Val Met Pro
 35 40 45

Leu Leu Ile Leu Phe Glu Ser Met Leu Cys Lys Ile Ile Ile Lys Lys
 50 55 60

Val Ala Tyr Thr Glu Ile Asp Tyr Lys Ala Tyr Met Glu Gln Ile Glu
 65 70 75 80

Met Ile Gln Leu Asp Gly Met Leu Asp Tyr Ser Gln Val Ser Gly Gly
 85 90 95

Thr Gly Pro Leu Val Tyr Pro Ala Gly His Val Leu Ile Tyr Lys Met
 100 105 110

Met Tyr Trp Leu Thr Glu Gly Met Asp His Val Glu Arg Gly Gln Val
 115 120 125

Phe Phe Arg Tyr Leu Tyr Leu Leu Thr Leu Ala Leu Gln Met Ala Cys
 130 135 140

Tyr Tyr Leu Leu His Leu Pro Pro Trp Cys Val Val Leu Ala Cys Leu
 145 150 155 160

Ser Lys Arg Leu His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp Cys
 165 170 175

Phe Thr Thr Leu Phe Met Val Val Thr Val Leu Gly Ala Ile Val Ala
 180 185 190

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Ser Arg Cys His Gln Arg Pro Lys Leu Lys Lys Ser Leu Ala Leu Val
195 200 205

Ile Ser Ala Thr Tyr Ser Met Ala Val Ser Ile Lys Met Asn Ala Leu
210 215 220

Leu Tyr Phe Pro Ala Met Met Ile Ser Leu Phe Ile Leu Asn Asp Ala
225 230 235 240

Asn Val Ile Leu Thr Leu Leu Asp Leu Val Ala Met Ile Ala Trp Gln
245 250 255

Val Ala Val Ala Val Pro Phe Leu Arg Ser Phe Pro Gln Gln Tyr Leu
260 265 270

His Cys Ala Phe Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile
275 280 285

Asn Trp Gln Met Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe Xaa
290 295 300

Xaa Phe Val
305 310 315 320

Thr Arg Tyr Pro Arg Ile Leu Pro Asp Leu Trp Ser Ser Leu Cys His
325 330 335

Pro Leu Arg Lys Asn Ala Val Leu Asn Ala Asn Pro Ala Lys Thr Ile
340 345 350

Pro Phe Val Leu Ile Ala Ser Asn Phe Ile Gly Val Leu Phe Ser Arg
355 360 365

Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro Ile
370 375 380

Leu Ile Phe Trp Ser Gly Met Pro Phe Phe Val Gly Pro Ile Trp Tyr
385 390 395 400

Val Leu His Glu Trp Cys Trp Asn Ser Tyr Pro Pro Asn Ser Gln Xaa
405 410 415

Xaa
420 425 430

Xaa Xaa Xaa Xaa Ser Gly Ser Val Ala Leu Ala Lys Ser His Leu Arg
435 440 445

Thr Thr Ser Ser Met Glu Lys Lys Leu Asn
450 455

<210> 25
<211> 458
<212> PRT
<213> *Saccharomyces cerevisiae*

<400> 25
 Met Glu Gly Glu Gln Ser Pro Gln Gly Glu Lys Ser Leu Gln Arg Lys
 1 5 10 15
 Gln Phe Val Arg Pro Pro Leu Asp Leu Trp Gln Asp Leu Lys Asp Gly
 20 25 30
 Val Arg Tyr Val Ile Phe Asp Cys Arg Ala Asn Leu Ile Val Met Pro
 35 40 45
 Leu Leu Ile Leu Phe Glu Ser Met Leu Cys Lys Ile Ile Ile Lys Lys
 50 55 60
 Val Ala Tyr Thr Glu Ile Asp Tyr Lys Ala Tyr Met Glu Gln Ile Glu
 65 70 75 80
 Met Ile Gln Leu Asp Gly Met Leu Asp Tyr Ser Gln Val Ser Gly Gly
 85 90 95
 Thr Gly Pro Leu Val Tyr Pro Ala Gly His Val Leu Ile Tyr Lys Met
 100 105 110
 Met Tyr Trp Leu Thr Glu Gly Met Asp His Val Glu Arg Gly Gln Val
 115 120 125
 Phe Phe Arg Tyr Leu Tyr Leu Leu Thr Leu Ala Leu Gln Met Ala Cys
 130 135 140
 Tyr Tyr Leu Leu His Leu Pro Pro Trp Cys Val Val Leu Ala Cys Leu
 145 150 155 160
 Ser Lys Arg Leu His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp Cys
 165 170 175
 Phe Thr Thr Leu Phe Met Val Val Thr Val Leu Gly Ala Ile Val Ala
 180 185 190
 Ser Arg Cys His Gln Arg Pro Lys Leu Lys Lys Ser Leu Ala Leu Val
 195 200 205
 Ile Ser Ala Thr Tyr Ser Met Ala Val Ser Ile Lys Met Asn Ala Leu
 210 215 220
 Leu Tyr Phe Pro Ala Met Met Ile Ser Leu Phe Ile Leu Asn Asp Ala
 225 230 235 240
 Asn Val Ile Leu Thr Leu Leu Asp Leu Val Ala Met Ile Ala Trp Gln
 245 250 255
 Val Ala Val Ala Val Pro Phe Leu Arg Ser Phe Pro Gln Gln Tyr Leu
 260 265 270
 His Cys Ala Phe Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile
 275 280 285
 Asn Trp Gln Met Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe His
 290 295 300

Leu Ala Leu Leu Ile Ser His Leu Ile Ala Leu Thr Thr Leu Phe Val
 305 310 315 320

Thr Arg Tyr Pro Arg Ile Leu Pro Asp Leu Trp Ser Ser Leu Cys His
 325 330 335

Pro Leu Arg Lys Asn Ala Val Leu Asn Ala Asn Pro Ala Lys Thr Ile
 340 345 350

Pro Phe Val Leu Ile Ala Ser Asn Phe Ile Gly Val Leu Phe Ser Arg
 355 360 365

Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro Ile
 370 375 380

Leu Ile Phe Trp Ser Gly Met Pro Phe Phe Val Gly Pro Ile Trp Tyr
 385 390 395 400

Val Leu His Glu Trp Cys Trp Asn Ser Tyr Pro Pro Asn Ser Gln Ala
 405 410 415

Ser Thr Leu Leu Ala Leu Asn Thr Val Leu Leu Leu Leu Ala
 420 425 430

Leu Thr Gln Leu Ser Gly Ser Val Ala Leu Ala Lys Ser His Leu Arg
 435 440 445

Thr Thr Ser Ser Met Glu Lys Lys Leu Asn
 450 455

<210> 26

<211> 443

<212> PRT

<213> *Saccharomyces cerevisiae*

<220>

<221> MOD_RES

<222> (333)..(347)

<223> Variable amino acid

<400> 26

Trp Gln Asp Leu Lys Asp Gly Val Arg Tyr Val Ile Phe Asp Cys Arg
 1 5 10 15

Ala Asn Leu Ile Val Met Pro Leu Leu Ile Leu Phe Glu Ser Met Leu
 20 25 30

Cys Lys Ile Ile Ile Lys Lys Val Ala Tyr Thr Glu Ile Asp Tyr Lys
 35 40 45

Ala Tyr Met Glu Gln Ile Glu Met Ile Gln Leu Asp Gly Met Leu Asp
 50 55 60

Tyr Ser Gln Val Ser Gly Gly Thr Gly Pro Leu Val Tyr Pro Ala Gly
 65 70 75 80

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His Val Leu Ile Tyr Lys Met Met Tyr Trp Leu Thr Glu Gly Met Asp
85 90 95

His Val Glu Arg Gly Gln Val Phe Phe Arg Tyr Leu Tyr Leu Leu Thr
100 105 110

Leu Ala Leu Gln Met Ala Cys Tyr Tyr Leu Leu His Leu Pro Pro Trp
115 120 125

Cys Val Val Leu Ala Cys Leu Ser Lys Arg Leu His Ser Ile Tyr Val
130 135 140

Leu Arg Leu Phe Asn Asp Cys Phe Thr Thr Leu Phe Met Val Val Thr
145 150 155 160

Val Leu Gly Ala Ile Val Ala Ser Arg Cys His Gln Arg Pro Lys Leu
165 170 175

Lys Lys His Gln Thr Cys Lys Val Pro Pro Phe Val Phe Phe Met
180 185 190

Cys Cys Ala Ser Tyr Arg Val His Ser Ile Phe Val Leu Arg Leu Phe
195 200 205

Asn Asp Pro Val Ala Met Val Leu Leu Phe Leu Ser Ile Asn Leu Leu
210 215 220

Leu Ala Gln Arg Trp Gly Trp Gly Ser Leu Ala Leu Val Ile Ser Ala
225 230 235 240

Thr Tyr Ser Met Ala Val Ser Ile Lys Met Asn Ala Leu Leu Tyr Phe
245 250 255

Pro Ala Met Met Ile Ser Leu Phe Ile Leu Asn Asp Ala Asn Val Ile
260 265 270

Leu Thr Leu Leu Asp Leu Val Ala Met Ile Ala Trp Gln Val Ala Val
275 280 285

Ala Val Pro Phe Leu Arg Ser Phe Pro Gln Gln Tyr Leu His Cys Ala
290 295 300

Phe Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile Asn Trp Gln
305 310 315 320

Met Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe Xaa Xaa Xaa Xaa
325 330 335

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Phe Val Thr Arg Tyr
340 345 350

Pro Arg Ile Leu Pro Asp Leu Trp Ser Ser Leu Cys His Pro Leu Arg
355 360 365

Lys Asn Ala Val Leu Asn Ala Asn Pro Ala Lys Thr Ile Pro Phe Val
370 375 380

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Leu Ile Ala Ser Asn Phe Ile Gly Val Leu Phe Ser Arg Ser Leu His
385 390 395 400

Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro Ile Leu Ile Phe
405 410 415

Trp Ser Gly Met Pro Phe Phe Val Gly Pro Ile Trp Tyr Val Leu His
420 425 430

Glu Trp Cys Trp Asn Ser Tyr Pro Pro Asn Ser
435 440

<210> 27

<211> 373

<212> PRT

<213> Homo sapiens

<400> 27

Trp Gln Glu Arg Arg Leu Leu Leu Arg Glu Pro Arg Tyr Thr Leu Leu
1 5 10 15

Val Ala Ala Cys Leu Cys Leu Ala Glu Val Gly Ile Thr Phe Trp Val
20 25 30

Ile His Arg Val Ala Tyr Thr Glu Ile Asp Trp Lys Ala Tyr Met Ala
35 40 45

Glu Val Glu Gly Val Gly Thr Tyr Asp Tyr Thr Gln Leu Gln Gly Asp
50 55 60

Thr Gly Pro Leu Val Tyr Pro Ala Gly Phe Val Tyr Ile Phe Met Gly
65 70 75 80

Leu Tyr Tyr Ala Thr Ser Arg Gly Thr Asp Ile Arg Met Ala Gln Asn
85 90 95

Ile Phe Ala Val Leu Tyr Leu Ala Thr Leu Leu Leu Val Phe Leu Ile
100 105 110

Tyr His Gln Thr Cys Lys Val Pro Pro Phe Val Phe Phe Met Cys
115 120 125

Cys Ala Ser Tyr Arg Val His Ser Ile Phe Val Leu Arg Leu Phe Asn
130 135 140

Asp Pro Val Ala Met Val Leu Leu Phe Leu Ser Ile Asn Leu Leu Leu
145 150 155 160

Ala Gln Arg Trp Gly Trp Gly Cys Cys Phe Phe Ser Leu Ala Val Ser
165 170 175

Val Lys Met Asn Val Leu Leu Phe Ala Pro Gly Leu Leu Phe Leu Leu
180 185 190

Leu Thr Gln Phe Gly Phe Arg Gly Ala Leu Pro Lys Leu Gly Ile Cys
195 200 205

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Ala Gly Leu Gln Val Val Leu Gly Leu Pro Phe Leu Leu Glu Asn Pro
210 215 220

Ser Gly Tyr Leu Ser Arg Ser Phe Asp Leu Gly Arg Gln Phe Leu Phe
225 230 235 240

His Trp Thr Val Asn Trp Arg Phe Leu Pro Glu Ala Leu Phe Leu His
245 250 255

Arg Ala Phe His Leu Ala Leu Leu Thr Ala His Leu Thr Leu Leu Leu
260 265 270

Leu Phe Ala Leu Cys Arg Trp His Arg Thr Gly Glu Ser Ile Leu Ser
275 280 285

Leu Leu Arg Asp Pro Ser Lys Arg Lys Val Pro Pro Gln Pro Leu Thr
290 295 300

Pro Asn Gln Ile Val Ser Thr Leu Phe Thr Ser Asn Phe Ile Gly Ile
305 310 315 320

Cys Phe Ser Arg Ser Leu His Tyr Gln Phe Tyr Val Trp Tyr Phe His
325 330 335

Thr Leu Pro Tyr Leu Leu Trp Ala Met Pro Ala Arg Trp Leu Thr His
340 345 350

Leu Leu Arg Leu Leu Val Leu Gly Leu Ile Glu Leu Ser Trp Asn Thr
355 360 365

Tyr Pro Ser Thr Ser
370

<210> 28

<211> 269

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 28

Val Arg Tyr Val Ile Phe Asp Cys Arg Ala Asn Leu Ile Val Met Pro
1 5 10 15

Leu Leu Ile Leu Phe Glu Ser Met Leu Cys Lys Ile Ile Ile Lys Lys
20 25 30

Val Ala Tyr Thr Glu Ile Asp Tyr Lys Ala Tyr Met Glu Gln Ile Glu
35 40 45

Met Ile Gln Leu Asp Gly Met Leu Asp Tyr Ser Gln Val Ser Gly Gly
50 55 60

Thr Gly Pro Leu Val Tyr Pro Ala Gly His Val Leu Ile Tyr Lys Met
65 70 75 80

Met Tyr Trp Leu Thr Glu Gly Met Asp His Val Glu Arg Gly Gln Val
85 90 95

Phe Phe Arg Tyr Leu Tyr Leu Leu Thr Leu Ala Leu Gln Met Ala Cys
 100 105 110
 Tyr Tyr Leu Leu His Pro Trp Cys Val Val Leu Ala Cys Leu Ser Lys
 115 120 125
 Arg Leu His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp Cys Phe Thr
 130 135 140
 Thr Leu Phe Met Val Val Thr Val Leu Gly Ala Ile Val Ala Ser Arg
 145 150 155 160
 Cys His Gln Arg Pro Lys Leu Lys Ser Leu Ala Leu Val Ile Ser
 165 170 175
 Ala Thr Tyr Ser Met Ala Val Ser Ile Lys Met Asn Ala Leu Leu Tyr
 180 185 190
 Phe Pro Ala Met Met Ile Ser Leu Phe Ile Leu Asn Asp Ala Asn Val
 195 200 205
 Ile Leu Thr Leu Leu Asp Leu Val Ala Met Ile Ala Trp Gln Val Ala
 210 215 220
 Val Ala Val Pro Phe Leu Arg Ser Phe Pro Gln Gln Tyr Leu His Cys
 225 230 235 240
 Ala Phe Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile Asn Trp
 245 250 255
 Gln Met Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe
 260 265

<210> 29
 <211> 258
 <212> PRT
 <213> Drosophila virilis

<400> 29
 Ile Lys Tyr Leu Ala Phe Glu Pro Ala Ala Leu Pro Ile Val Ser Val
 1 5 10 15
 Leu Ile Val Leu Ala Glu Ala Val Ile Asn Val Leu Val Ile Gln Arg
 20 25 30
 Val Pro Tyr Thr Glu Ile Asp Trp Lys Ala Tyr Met Gln Glu Cys Glu
 35 40 45
 Gly Phe Leu Asn Gly Thr Thr Asn Tyr Ser Leu Leu Arg Gly Asp Thr
 50 55 60
 Gly Pro Leu Val Tyr Pro Ala Ala Phe Val Tyr Ile Tyr Ser Gly Leu
 65 70 75 80
 Tyr Tyr Leu Thr Gly Gln Gly Thr Asn Val Arg Leu Ala Gln Tyr Ile
 85 90 95

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Phe Ala Cys Ile Tyr Leu Leu Gln Met Cys Leu Val Leu Arg Leu Tyr
100 105 110

Thr Lys Ser Arg Lys Val Pro Pro Tyr Val Leu Val Leu Ser Ala Phe
115 120 125

Thr Ser Tyr Arg Ile His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp
130 135 140

Pro Val Ala Ile Leu Leu Tyr Ala Ala Leu Asn Leu Phe Leu Asp
145 150 155 160

Gln Arg Trp Thr Leu Gly Ser Ile Cys Tyr Ser Leu Ala Val Gly Val
165 170 175

Lys Met Asn Ile Leu Leu Phe Ala Pro Ala Leu Leu Leu Phe Tyr Leu
180 185 190

Ala Asn Leu Gly Val Leu Arg Thr Leu Val Gln Leu Thr Ile Cys Ala
195 200 205

Val Leu Gln Leu Phe Ile Gly Ala Pro Phe Leu Arg Thr His Pro Met
210 215 220

Glu Tyr Leu Arg Gly Ser Phe Asp Leu Gly Arg Ile Phe Glu His Lys
225 230 235 240

Trp Thr Val Asn Tyr Arg Phe Leu Ser Lys Glu Leu Phe Glu Gln Arg
245 250 255

Glu Phe

<210> 30
<211> 267
<212> PRT
<213> *Saccharomyces cerevisiae*

<400> 30
Arg Tyr Val Ile Phe Asp Cys Arg Ala Asn Leu Ile Val Met Pro Leu
1 5 10 15

Leu Ile Leu Phe Glu Ser Met Leu Cys Lys Ile Ile Ile Lys Lys Val
20 25 30

Ala Tyr Thr Glu Ile Asp Tyr Lys Ala Tyr Met Glu Gln Ile Glu Met
35 40 45

Ile Gln Leu Asp Gly Met Leu Asp Tyr Ser Gln Val Ser Gly Gly Thr
50 55 60

Gly Pro Leu Val Tyr Pro Ala Gly His Val Leu Ile Tyr Lys Met Met
65 70 75 80

Tyr Trp Leu Thr Glu Gly Met Asp His Val Glu Arg Gly Gln Val Phe
85 90 95

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Phe Arg Tyr Leu Tyr Leu Leu Thr Leu Ala Leu Gln Met Ala Cys Tyr
100 105 110

Tyr Leu Leu His Trp Cys Val Val Leu Ala Cys Leu Ser Lys Arg Leu
115 120 125

His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp Cys Phe Thr Thr Leu
130 135 140

Phe Met Val Val Thr Val Leu Gly Ala Ile Val Ala Ser Arg Cys His
145 150 155 160

Gln Arg Pro Lys Leu Lys Lys Ser Leu Ala Leu Val Ile Ser Ala Thr
165 170 175

Tyr Ser Met Ala Val Ser Ile Lys Met Asn Ala Leu Leu Tyr Phe Pro
180 185 190

Ala Met Met Ile Ser Leu Phe Ile Leu Asn Asp Ala Asn Val Ile Leu
195 200 205

Thr Leu Leu Asp Leu Val Ala Met Ile Ala Trp Gln Val Ala Val Ala
210 215 220

Val Pro Phe Leu Arg Ser Phe Pro Gln Gln Tyr Leu His Cys Ala Phe
225 230 235 240

Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile Asn Trp Gln Met
245 250 255

Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe
260 265

<210> 31

<211> 257

<212> PRT

<213> Drosophila melanogaster

<400> 31

Lys Tyr Leu Leu Leu Glu Pro Ala Ala Leu Pro Ile Val Gly Leu Phe
1 5 10 15

Val Leu Leu Ala Glu Leu Val Ile Asn Val Val Val Ile Gln Arg Val
20 25 30

Pro Tyr Thr Glu Ile Asp Trp Val Ala Tyr Met Gln Glu Cys Glu Gly
35 40 45

Phe Leu Asn Gly Thr Thr Asn Tyr Ser Leu Leu Arg Gly Asp Thr Gly
50 55 60

Pro Leu Val Tyr Pro Ala Ala Phe Val Tyr Ile Tyr Ser Ala Leu Tyr
65 70 75 80

Tyr Val Thr Ser His Gly Thr Asn Val Arg Leu Ala Gln Tyr Ile Phe
85 90 95

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Ala Gly Ile Tyr Leu Leu Gln Leu Ala Leu Val Leu Arg Leu Tyr Ser
100 105 110

Lys Ser Arg Lys Val Pro Pro Tyr Val Leu Val Leu Ser Ala Phe Thr
115 120 125

Ser Tyr Arg Ile His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp Pro
130 135 140

Val Ala Val Leu Leu Tyr Ala Ala Leu Asn Leu Phe Leu Asp Arg
145 150 155 160

Arg Trp Thr Leu Gly Ser Thr Phe Phe Ser Leu Ala Val Gly Val Lys
165 170 175

Met Asn Ile Leu Leu Phe Ala Pro Ala Leu Leu Leu Phe Tyr Leu Ala
180 185 190

Asn Leu Gly Leu Leu Arg Thr Ile Leu Gln Leu Ala Val Cys Gly Val
195 200 205

Ile Gln Leu Leu Gly Ala Pro Phe Leu Leu Thr His Pro Val Glu
210 215 220

Tyr Leu Arg Gly Ser Phe Asp Leu Gly Arg Ile Phe Glu His Lys Trp
225 230 235 240

Thr Val Asn Tyr Arg Phe Leu Ser Arg Asp Val Phe Glu Asn Arg Thr
245 250 255

Phe

<210> 32

<211> 1377

<212> DNA

<213> *Saccharomyces cerevisiae*

<400> 32

atggaagggtg aacagtctcc gcaagggtgaa aagtctctgc aaaggaagca atttgcaga 60
cctccgctgg atctgtggca ggatctcaag gacgggtgtc gctacgtat cttcgattgt 120
agggccaatc ttatcgttat gccccttttgc atttgttgc aaagcatgtc gtgcaggatt 180
atcattaaga aggttagctt cacagagatc gattacaagg cgtacatggc gcagatcgag 240
atgattcagc tcgatggcat gctggactac tctcagggtga gtggtggaaac gggcccgctg 300
gtgtatccag caggccacgt cttgatctac aagatgtatgt actggctaac agagggaaatg 360
gaccacgttgc agcgcggggca agtgttttc agatacttgtt atctccttac actggcgta 420
caaatggcgt gttactacact tttacatcttcc accctgtgtt gtgtggtctt ggcgtgcctc 480
tctaaaagat tgcactctat ttacgtgttca cggttattca atgattgtt cactacttg 540
tttatggtcg tcacggttt ggggcttac gtggccagca ggtgccatca ggcgcggccaaa 600
ttaaagaagt cccttgcgtt ggtgatctcc gcaacatata gtatggctgt gagcattaag 660
atgaatgcgc tgggttattt ccctgcataatg atgatttctc tattcatctt taatgacgcg 720
aacgtaatcc ttactttgtt ggatctcggtt gcgatgttgcatggcaatgt cgcaatggca 780
gtgccttcg tgcgcagatc tccgcaacatg tacctgcatt ggcgttttaa tttcgccagg 840
aagtttatgtt accaatggatg tattcaattgg caaatgttgc atgaaagaggc tttcaatgtat 900
aagaggttcc acttggccct tttatcagc cacctgttgc cgtcaccac actgttgcgtc 960
acaagatacc ctcgcatcc gcccgttta tggtcttccc tggccatcc gctggagaaa 1020
aatgcagtgc tcaatgccaa tccccccaag actattccat tcgttctaat cgcatccaa 1080

ttcatcgccg tcctatttc aaggccctc cactaccgt ttctatcctg gtatcactgg 1140
 acttgccta tactgatctt ttggcggga atgccccttct tcgttggtcc catttggtag 1200
 gtcttcacg agtgggtctg gaattccat cacaagcaag cacgctattg 1260
 ttggcattga atactgttctt gttgttctta ttggccttga cgcaagctatc tggttcggtc 1320
 gcccctcgcca aaagccatct tcgttaccacc agctctatgg aaaaaaaagct caactga 1377

<210> 33

<211> 458

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 33

Met	Glu	Gly	Glu	Gln	Ser	Pro	Gln	Gly	Glu	Lys	Ser	Leu	Gln	Arg	Lys
1															

5

10

15

Gln	Phe	Val	Arg	Pro	Pro	Leu	Asp	Leu	Trp	Gln	Asp	Leu	Lys	Asp	Gly

20

25

30

Val	Arg	Tyr	Val	Ile	Phe	Asp	Cys	Arg	Ala	Asn	Leu	Ile	Val	Met	Pro

35

40

45

Leu	Leu	Ile	Leu	Phe	Glu	Ser	Met	Leu	Cys	Lys	Ile	Ile	Ile	Lys	Lys

50

55

60

Val	Ala	Tyr	Thr	Glu	Ile	Asp	Tyr	Lys	Ala	Tyr	Met	Glu	Gln	Ile	Glu

65

70

75

80

Met	Ile	Gln	Leu	Asp	Gly	Met	Leu	Asp	Tyr	Ser	Gln	Val	Ser	Gly	Gly

85

90

95

Thr	Gly	Pro	Leu	Val	Tyr	Pro	Ala	Gly	His	Val	Leu	Ile	Tyr	Lys	Met

100

105

110

Met	Tyr	Trp	Leu	Thr	Glu	Gly	Met	Asp	His	Val	Glu	Arg	Gly	Gln	Val

115

120

125

Phe	Phe	Arg	Tyr	Leu	Tyr	Leu	Leu	Thr	Leu	Ala	Leu	Gln	Met	Ala	Cys

130

135

140

Tyr	Tyr	Leu	Leu	His	Leu	Pro	Pro	Trp	Cys	Val	Val	Leu	Ala	Cys	Leu

145

150

155

160

Ser	Lys	Arg	Leu	His	Ser	Ile	Tyr	Val	Leu	Arg	Leu	Phe	Asn	Asp	Cys

165

170

175

Phe	Thr	Thr	Leu	Phe	Met	Val	Val	Thr	Val	Leu	Gly	Ala	Ile	Val	Ala

180

185

190

Ser	Arg	Cys	His	Gln	Arg	Pro	Lys	Leu	Lys	Lys	Ser	Leu	Ala	Leu	Val

195

200

205

Ile	Ser	Ala	Thr	Tyr	Ser	Met	Ala	Val	Ser	Ile	Lys	Met	Asn	Ala	Leu

210

215

220

Leu	Tyr	Phe	Pro	Ala	Met	Met	Ile	Ser	Leu	Phe	Ile	Leu	Asn	Asp	Ala

225

230

235

240

Asn Val Ile Leu Thr Leu Leu Asp Leu Val Ala Met Ile Ala Trp Gln
 245 250 255
 Val Ala Val Ala Val Pro Phe Leu Arg Ser Phe Pro Gln Gln Tyr Leu
 260 265 270
 His Cys Ala Phe Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile
 275 280 285
 Asn Trp Gln Met Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe His
 290 295 300
 Leu Ala Leu Leu Ile Ser His Leu Ile Ala Leu Thr Thr Leu Phe Val
 305 310 315 320
 Thr Arg Tyr Pro Arg Ile Leu Pro Asp Leu Trp Ser Ser Leu Cys His
 325 330 335
 Pro Leu Arg Lys Asn Ala Val Leu Asn Ala Asn Pro Ala Lys Thr Ile
 340 345 350
 Pro Phe Val Leu Ile Ala Ser Asn Phe Ile Gly Val Leu Phe Ser Arg
 355 360 365
 Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro Ile
 370 375 380
 Leu Ile Phe Trp Ser Gly Met Pro Phe Phe Val Gly Pro Ile Trp Tyr
 385 390 395 400
 Val Leu His Glu Trp Cys Trp Asn Ser Tyr Pro Pro Asn Ser Gln Ala
 405 410 415
 Ser Thr Leu Leu Ala Leu Asn Thr Val Leu Leu Leu Leu Ala
 420 425 430
 Leu Thr Gln Leu Ser Gly Ser Val Ala Leu Ala Lys Ser His Leu Arg
 435 440 445
 Thr Thr Ser Ser Met Glu Lys Lys Leu Asn
 450 455

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 <211> 1395
 <212> DNA
 <213> Pichia pastoris

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 ctatggctc ttattcaaaa cgttttattt aacccagatt ttatgtgttt cgttgcaccc 120
 cttttatgtt tagctgatcc cattgttatac aaggtgatca ttggcactgt ttcctacaca 180
 gatattgatt tttcttcata tatgcaacaa atctttaaaa ttgcacaagg agaatttagat 240
 tatacgcaaca tattttgttga caccggtcca ttggtttacc cagccgggcca tgttcatgt 300
 tactcagttac tttcgtggta cagtgtatgtt ggagaagacg tcagtttcgt tcaacaagca 360
 tttgttgggt tataccttagg ttgcttggta ctatccatca gcttctactt tttctctggc 420
 tttagggaaaa tacctccgggt ttatttgtt ttgttggtag cgttccaagag actgcattca 480
 atatttgtat tgagactctt caatgactgtt ttaacaacat tttgtatgtt ggcaactata 540

atcatccttc aacaaggcaag tagctggagg aaagatggca caactattcc attatctgtc 600
 cctgatgctg cagatacgt aagtttagcc atctctgtaa agatgaatgc gctgctatac 660
 ctcccagcat tcctactact catatatctc atttgtgacg aaaattttagt taaaggcttg 720
 gcacctgttc tagtttgat attgggtgcaa gtaggagtcg gttattcggtt cattttaccc 780
 ttgcactatg atgatcaggc aaatgaaatt cgttctgcct acttagaca ggctttgac 840
 ttttagtcgccc aatttcttta taagtggacg gtttaatttgc gcttttgag ccaagaaact 900
 ttcaacaatg tccatatttca ccagctcctg tttgctctcc atattattac gtttagtcttg 960
 ttcatcctca agttccttc tcctaaaaac attggaaaac cgcttggtag atttgtgttg 1020
 gacatttca aattttggaa gccaacctta tctccaacca atattatcaa cgacccagaa 1080
 agaagccag attttggta caccgtcatg gctactacca acttaatagg ggtgctttt 1140
 gcaagatctt tacactacca gttcctaagc tggtatgcgt tctcttgcc atatctcctt 1200
 tacaaggctc gtctgaacctt tatacgatctt attattgtttt atggcgctca cgagtatgtc 1260
 tggttggttt tcccagctac agaacaagaat tcccggttgtt tggtatctat cttactactt 1320
 atcctgattc tcattttac caacgaacag ttatttcctt ctcaatcggt ccctgcagaa 1380
 aaaaagaata cataa 1395

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 <212> PRT
 <213> *Pichia pastoris*

<400> 35

Met Pro Pro Ile Glu Pro Ala Glu Arg Pro Lys Leu Thr Leu Lys Asn
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Val Ile Gly Asp Leu Val Ala Leu Ile Gln Asn Val Leu Phe Asn Pro
 20 25 30

Asp Phe Ser Val Phe Val Ala Pro Leu Leu Trp Leu Ala Asp Ser Ile
 35 40 45

Val Ile Lys Val Ile Ile Gly Thr Val Ser Tyr Thr Asp Ile Asp Phe
 50 55 60

Ser Ser Tyr Met Gln Gln Ile Phe Lys Ile Arg Gln Gly Glu Leu Asp
 65 70 75 80

Tyr Ser Asn Ile Phe Gly Asp Thr Gly Pro Leu Val Tyr Pro Ala Gly
 85 90 95

His Val His Ala Tyr Ser Val Leu Ser Trp Tyr Ser Asp Gly Gly Glu
 100 105 110

Asp Val Ser Phe Val Gln Gln Ala Phe Gly Trp Leu Tyr Leu Gly Cys
 115 120 125

Leu Leu Leu Ser Ile Ser Ser Tyr Phe Phe Ser Gly Leu Gly Lys Ile
 130 135 140

Pro Pro Val Tyr Phe Val Leu Leu Val Ala Ser Lys Arg Leu His Ser
 145 150 155 160

Ile Phe Val Leu Arg Leu Phe Asn Asp Cys Leu Thr Thr Phe Leu Met
 165 170 175

Leu Ala Thr Ile Ile Leu Gln Gln Ala Ser Ser Trp Arg Lys Asp
 180 185 190

Gly Thr Thr Ile Pro Leu Ser Val Pro Asp Ala Ala Asp Thr Tyr Ser
 195 200 205
 Leu Ala Ile Ser Val Lys Met Asn Ala Leu Leu Tyr Leu Pro Ala Phe
 210 215 220
 Leu Leu Leu Ile Tyr Leu Ile Cys Asp Glu Asn Leu Ile Lys Ala Leu
 225 230 235 240
 Ala Pro Val Leu Val Leu Ile Leu Val Gln Val Gly Val Gly Tyr Ser
 245 250 255
 Phe Ile Leu Pro Leu His Tyr Asp Asp Gln Ala Asn Glu Ile Arg Ser
 260 265 270
 Ala Tyr Phe Arg Gln Ala Phe Asp Phe Ser Arg Gln Phe Leu Tyr Lys
 275 280 285
 Trp Thr Val Asn Trp Arg Phe Leu Ser Gln Glu Thr Phe Asn Asn Val
 290 295 300
 His Phe His Gln Leu Leu Phe Ala Leu His Ile Ile Thr Leu Val Leu
 305 310 315 320
 Phe Ile Leu Lys Phe Leu Ser Pro Lys Asn Ile Gly Lys Pro Leu Gly
 325 330 335
 Arg Phe Val Leu Asp Ile Phe Lys Phe Trp Lys Pro Thr Leu Ser Pro
 340 345 350
 Thr Asn Ile Ile Asn Asp Pro Glu Arg Ser Pro Asp Phe Val Tyr Thr
 355 360 365
 Val Met Ala Thr Thr Asn Leu Ile Gly Val Leu Phe Ala Arg Ser Leu
 370 375 380
 His Tyr Gln Phe Leu Ser Trp Tyr Ala Phe Ser Leu Pro Tyr Leu Leu
 385 390 395 400
 Tyr Lys Ala Arg Leu Asn Phe Ile Ala Ser Ile Ile Val Tyr Ala Ala
 405 410 415
 His Glu Tyr Cys Trp Leu Val Phe Pro Ala Thr Glu Gln Ser Ser Ala
 420 425 430
 Leu Leu Val Ser Ile Leu Leu Ile Leu Ile Leu Ile Phe Thr Asn
 435 440 445
 Glu Gln Leu Phe Pro Ser Gln Ser Val Pro Ala Glu Lys Lys Asn Thr
 450 455 460

<210> 36
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 <212> PRT
 <213> Pichia pastoris

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<222> (209)..(223)

<223> Variable amino acid

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<221> MOD_RES

<222> (235)..(246)

<223> Variable amino acid

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Arg Pro Lys Leu Thr Leu Lys Asn Val Ile Gly Asp Leu Val Ala Leu
1 5 10 15

Ile Gln Asn Val Leu Phe Asn Pro Asp Phe Ser Val Phe Val Ala Pro
20 25 30

Leu Leu Trp Leu Ala Asp Ser Ile Val Ile Lys Val Ile Ile Gly Thr
35 40 45

Val Ser Tyr Thr Asp Ile Asp Phe Ser Ser Tyr Met Gln Gln Ile Phe
50 55 60

Lys Ile Arg Gln Gly Glu Leu Asp Tyr Ser Asn Ile Phe Gly Asp Thr
65 70 75 80

Gly Pro Leu Val Tyr Pro Ala Gly His Val His Ala Tyr Ser Val Leu
85 90 95

Ser Trp Tyr Ser Asp Gly Glu Asp Val Ser Phe Val Gln Gln Ala
100 105 110

Phe Gly Trp Leu Tyr Leu Gly Cys Leu Leu Ser Ile Ser Ser Tyr
115 120 125

Phe Phe Ser Gly Leu Gly Lys Ile Pro Pro Val Tyr Phe Val Leu Leu
130 135 140

Val Ala Ser Lys Arg Leu His Ser Ile Phe Val Leu Arg Leu Phe Asn
145 150 155 160

Asp Cys Leu Thr Thr Phe Leu Met Leu Ala Thr Ile Ile Ile Leu Gln
165 170 175

Gln Ala Ser Ser Trp Arg Lys Asp Gly Thr Thr Ile Pro Leu Ser Val
180 185 190

Pro Asp Ala Ala Asp Thr Tyr Ser Leu Ala Ile Ser Val Lys Met Asn
195 200 205

Xaa Cys
210 215 220

Asp Glu Asn Leu Ile Lys Ala Leu Ala Pro Xaa Xaa Xaa Xaa Xaa Xaa
225 230 235 240

Xaa Xaa Xaa Xaa Xaa Xaa Tyr Ser Phe Ile Leu Pro Leu His Tyr Asp
245 250 255

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Asp Gln Ala Asn Glu Ile Arg Ser Ala Tyr Phe Arg Gln Ala Phe Asp
260 265 270

Phe Ser Arg Gln Phe Leu Tyr Lys Trp Thr Val Asn Trp Arg Phe Leu
275 280 285

Ser Gln Glu Thr Phe Asn Asn Val His Phe His Gln Leu Leu Phe Ala
290 295 300

Leu His Ile Ile Thr Leu Val Leu Phe Ile Leu Lys Phe Leu Ser Pro
305 310 315 320

Lys Asn Ile Gly Lys Pro Leu Gly Arg Phe Val Leu Asp Ile Phe Lys
325 330 335

Phe Trp Lys Pro Thr Leu Ser Pro Thr Asn Ile Ile Asn Pro Asp Phe
340 345 350

Val Tyr Thr Val Met Ala Thr Thr Asn Leu Ile Gly Val Leu Phe Ala
355 360 365

Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr Ala Phe Ser Leu Pro
370 375 380

Tyr Leu Leu Tyr Lys Ala Arg Leu Asn Phe Ile Ala Ser Ile Ile Val
385 390 395 400

Tyr Ala Ala His Glu Tyr Cys Trp Leu Val Phe Pro Ala Thr Glu Gln
- 405 410 415

Ser Ser

<210> 37
<211> 398
<212> PRT
<213> *Saccharomyces cerevisiae*

<400> 37
Arg Pro Pro Leu Asp Leu Trp Gln Asp Leu Lys Asp Gly Val Arg Tyr
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Val Ile Phe Asp Cys Arg Ala Asn Leu Ile Val Met Pro Leu Leu Ile
20 25 30

Leu Phe Glu Ser Met Leu Cys Lys Ile Ile Ile Lys Lys Val Ala Tyr
35 40 45

Thr Glu Ile Asp Tyr Lys Ala Tyr Met Glu Gln Ile Glu Met Ile Gln
50 55 60

Leu Asp Gly Met Leu Asp Tyr Ser Gln Val Ser Gly Gly Thr Gly Pro
65 70 75 80

Leu Val Tyr Pro Ala Gly His Val Leu Ile Tyr Lys Met Met Tyr Trp
85 90 95

Leu Thr Glu Gly Met Asp His Val Glu Arg Gly Gln Val Phe Phe Arg
 100 105 110
 Tyr Leu Tyr Leu Leu Thr Leu Ala Leu Gln Met Ala Cys Tyr Tyr Leu
 115 120 125
 Leu His Leu Pro Pro Trp Cys Val Val Leu Ala Cys Leu Ser Lys Arg
 130 135 140
 Leu His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp Cys Phe Thr Thr
 145 150 155 160
 Leu Phe Met Val Val Thr Val Leu Gly Ala Ile Val Ala Ser Arg Cys
 165 170 175
 His Gln Arg Pro Lys Leu Lys Ser Leu Ala Leu Val Ile Ser Ala
 180 185 190
 Thr Tyr Ser Met Ala Val Ser Ile Lys Met Asn Ala Leu Leu Tyr Phe
 195 200 205
 Pro Ala Met Met Ile Ser Leu Phe Ile Leu Asn Asp Ala Asn Val Ile
 210 215 220
 Leu Thr Leu Leu Asp Leu Val Ala Met Ile Ala Trp Gln Val Ala Val
 225 230 235 240
 Ala Val Pro Phe Leu Arg Ser Phe Pro Gln Gln Tyr Leu His Cys Ala
 245 250 255
 Phe Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile Asn Trp Gln
 260 265 270
 Met Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe His Leu Ala Leu
 275 280 285
 Leu Ile Ser His Leu Ile Ala Leu Thr Thr Leu Phe Val Thr Arg Tyr
 290 295 300
 Pro Arg Ile Leu Pro Asp Leu Trp Ser Ser Leu Cys His Pro Leu Arg
 305 310 315 320
 Lys Asn Ala Val Leu Asn Ala Asn Pro Ala Lys Thr Ile Pro Phe Val
 325 330 335
 Leu Ile Ala Ser Asn Phe Ile Gly Val Leu Phe Ser Arg Ser Leu His
 340 345 350
 Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro Ile Leu Ile Phe
 355 360 365
 Trp Ser Gly Met Pro Phe Phe Val Gly Pro Ile Trp Tyr Val Leu His
 370 375 380
 Glu Trp Cys Trp Asn Ser Tyr Pro Pro Asn Ser Gln Ala Ser
 385 390 395

<210> 38
<211> 387
<212> PRT
<213> *Pichia pastoris*

<220>
<221> MOD_RES
<222> (183)..(197)
<223> Variable amino acid

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<220>
<221> MOD_RES
<222> (209)..(220)
<223> Variable amino acid
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Ser Val Phe Val Ala Pro Leu Leu Trp Leu Ala Asp Ser Ile Val Ile
1 5 10 15

Lys Val Ile Ile Gly Thr Val Ser Tyr Thr Asp Ile Asp Phe Ser Ser
20 25 30

Tyr Met Gln Gln Ile Phe Lys Ile Arg Gln Gly Glu Leu Asp Tyr Ser
 35 40 45

Asn Ile Phe Gly Asp Thr Gly Pro Leu Val Tyr Pro Ala Gly His Val.
50 55 60

His Ala Tyr Ser Val⁶⁵ Leu Ser Trp Tyr Ser Asp Gly Gly Glu Asp Val⁸⁰

Ser Phe Val Gln Gln Ala Phe Gly Trp Leu Tyr Leu Gly Cys Leu Leu
85 90 95

Leu Ser Ile Ser Ser Tyr Phe Phe Ser Gly Leu Gly Lys Ile Pro Pro
100 105 110

Val Tyr Phe Val Leu Leu Val Ala Ser Lys Arg Leu His Ser Ile Phe
 115 120 125

Val Leu Arg Leu Phe Asn Asp Cys Leu Thr Thr Phe Leu Met Leu Ala
130 135 140

Thr Ile Ile Ile Leu Gln Gln Ala Ser Ser Trp Arg Lys Asp Gly Thr
 145 150 155 160

Xaa Xaa Xaa Xaa Xaa Cys Asp Glu Asn Leu Ile Lys Ala Leu Ala Pro
195 200 205

Leu Pro Leu His Tyr Asp Asp Gln Ala Asn Glu Ile Arg Ser Ala Tyr
 225 230 235 240

Phe Arg Gln Ala Phe Asp Phe Ser Arg Gln Phe Leu Tyr Lys Trp Thr
 245 250 255

Val Asn Trp Arg Phe Leu Ser Gln Glu Thr Phe Asn Asn Val His Phe
 260 265 270

His Gln Leu Leu Phe Ala Leu His Ile Ile Thr Leu Val Leu Phe Ile
 275 280 285

Pro Leu Gly Arg Phe Val Leu Asp Ile Phe Lys Phe Trp Lys Pro Thr
 290 295 300

Leu Ser Pro Thr Asn Ile Ile Asn Asp Pro Glu Arg Ser Pro Asp Phe
 305 310 315 320

Val Tyr Thr Val Met Ala Thr Thr Asn Leu Ile Gly Val Leu Phe Ala
 325 330 335

Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr Ala Phe Ser Leu Pro
 340 345 350

Tyr Leu Leu Tyr Lys Ala Arg Leu Asn Phe Ile Ala Ser Ile Ile Val
 355 360 365

Tyr Ala Ala His Glu Tyr Cys Trp Leu Val Phe Pro Ala Thr Glu Gln
 370 375 380

Ser Ser Ala
 385

<210> 39
 <211> 373
 <212> PRT
 <213> Neurospora crassa

<400> 39

Ser Lys Leu Ile Pro Pro Ala Leu Phe Leu Val Asp Ala Leu Leu Cys
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Gly Leu Ile Ile Trp Lys Val Pro Tyr Thr Glu Ile Asp Trp Ala Ala
 20 25 30

Tyr Met Glu Gln Val Ser Gln Ile Leu Ser Gly Glu Arg Asp Tyr Thr
 35 40 45

Lys Val Arg Gly Gly Thr Gly Pro Leu Val Tyr Pro Ala Ala His Val
 50 55 60

Tyr Ile Tyr Thr Gly Leu Tyr His Leu Thr Asp Glu Gly Arg Asn Ile
 65 70 75 80

Leu Leu Ala Gln Gln Leu Phe Ala Gly Leu Tyr Met Val Thr Leu Ala
 85 90 95

Val Val Met Gly Cys Tyr Trp Gln Ala Lys Ala Pro Pro Tyr Leu Phe
 100 105 110
 Pro Leu Leu Thr Leu Ser Lys Arg Leu His Ser Ile Phe Val Leu Arg
 115 120 125
 Cys Phe Asn Asp Cys Phe Ala Val Leu Phe Leu Trp Leu Ala Ile Phe
 130 135 140
 Phe Phe Gln Arg Arg Asn Trp Gln Ala Gly Ala Leu Leu Tyr Thr Leu
 145 150 155 160
 Gly Leu Gly Val Lys Met Thr Leu Leu Ser Leu Pro Ala Val Gly
 165 170 175
 Ile Val Leu Phe Leu Gly Ser Gly Ser Phe Val Thr Thr Leu Gln Leu
 180 185 190
 Val Ala Thr Met Gly Leu Val Gln Ile Leu Ile Gly Val Pro Phe Leu
 195 200 205
 Ala His Tyr Pro Thr Glu Tyr Leu Ser Arg Ala Phe Glu Leu Ser Arg
 210 215 220
 Gln Phe Phe Phe Lys Trp Thr Val Asn Trp Arg Phe Val Gly Glu Glu
 225 230 235 240
 Ile Phe Leu Ser Lys Gly Phe Ala Leu Thr Leu Leu Ala Leu His Val
 - 245 250 255
 Leu Val Leu Gly Ile Phe Ile Thr Thr Arg Trp Ile Lys Pro Ala Arg
 260 265 270
 Lys Ser Leu Val Gln Leu Ile Ser Pro Val Leu Leu Ala Gly Lys Pro
 275 280 285
 Pro Leu Thr Val Pro Glu His Arg Ala Ala Ala Arg Asp Val Thr Pro
 290 295 300
 Arg Tyr Ile Met Thr Thr Ile Leu Ser Ala Asn Ala Val Gly Leu Leu
 305 310 315 320
 Phe Ala Arg Ser Leu His Tyr Gln Phe Tyr Ala Tyr Val Ala Trp Ser
 325 330 335
 Thr Pro Phe Leu Leu Trp Arg Ala Gly Leu His Pro Val Leu Val Tyr
 340 345 350
 Leu Leu Trp Ala Val His Glu Trp Ala Trp Asn Val Phe Pro Ser Thr
 355 360 365
 Pro Ala Ser Ser Ala
 370
 <210> 40
 <211> 390

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<212> PRT
<213> Pichia pastoris

<220>
<221> MOD_RES
<222> (176)..(190)
<223> Variable amino acid

<220>
<221> MOD_RES
<222> (202)..(213)
<223> Variable amino acid

<400> 40

Leu Trp Leu Ala Asp Ser Ile Val Ile Lys Val Ile Ile Gly Thr Val
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Ser Tyr Thr Asp Ile Asp Phe Ser Ser Tyr Met Gln Gln Ile Phe Lys
20 25 30

Ile Arg Gln Gly Glu Leu Asp Tyr Ser Asn Ile Phe Gly Asp Thr Gly
35 40 45

Pro Leu Val Tyr Pro Ala Gly His Val His Ala Tyr Ser Val Leu Ser
50 55 60

Trp Tyr Ser Asp Gly Gly Glu Asp Val Ser Phe Val Gln Gln Ala Phe
65 70 75 80

Gly Trp Leu Tyr Leu Gly Cys Leu Leu Leu Ser Ile Ser Ser Tyr Phe
85 90 95

Phe Ser Gly Leu Gly Lys Ile Pro Pro Val Tyr Phe Val Leu Leu Val
100 105 110

Ala Ser Lys Arg Leu His Ser Ile Phe Val Leu Arg Leu Phe Asn Asp
115 120 125

Cys Leu Thr Thr Phe Leu Met Leu Ala Thr Ile Ile Ile Leu Gln Gln
130 135 140

Ala Ser Ser Trp Arg Lys Asp Gly Thr Thr Ile Pro Leu Ser Val Pro
145 150 155 160

Asp Ala Ala Asp Thr Tyr Ser Leu Ala Ile Ser Val Lys Met Asn Xaa
165 170 175

Xaa Cys Asp
180 185 190

Glu Asn Leu Ile Lys Ala Leu Ala Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa
195 200 205

Xaa Xaa Xaa Xaa Xaa Tyr Ser Phe Ile Leu Pro Leu His Tyr Asp Asp
210 215 220

Gln Ala Asn Glu Ile Arg Ser Ala Tyr Phe Arg Gln Ala Phe Asp Phe
225 230 235 240

Ser Arg Gln Phe Leu Tyr Lys Trp Thr Val Asn Trp Arg Phe Leu Ser
 245 250 255

Gln Glu Thr Phe Asn Asn Val His Phe His Gln Leu Leu Phe Ala Leu
 260 265 270

His Ile Ile Thr Leu Val Leu Phe Ile Leu Lys Phe Leu Ser Pro Lys
 275 280 285

Asn Ile Gly Lys Pro Leu Gly Arg Phe Val Leu Asp Ile Phe Lys Phe
 290 295 300

Trp Lys Pro Thr Leu Ser Pro Thr Asn Ile Ile Asn Asp Pro Glu Arg
 305 310 315 320

Ser Pro Asp Phe Val Tyr Thr Val Met Ala Thr Thr Asn Leu Ile Gly
 325 330 335

Val Leu Phe Ala Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr Ala
 340 345 350

Phe Ser Leu Pro Tyr Leu Leu Tyr Lys Ala Arg Leu Asn Phe Ile Ala
 355 360 365

Ser Ile Ile Val Tyr Ala Ala His Glu Tyr Cys Trp Leu Val Phe Pro
 370 375 380

Ala Thr Glu Gln Ser Ser
 385 390

<210> 41

<211> 355

<212> PRT

<213> Schizosaccharomyces pombe

<400> 41

Leu Leu Leu Leu Glu Ile Pro Phe Val Phe Ala Ile Ile Ser Lys Val
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Pro Tyr Thr Glu Ile Asp Trp Ile Ala Tyr Met Glu Gln Val Asn Ser
 20 25 30

Phe Leu Leu Gly Glu Arg Asp Tyr Lys Ser Leu Val Gly Cys Thr Gly
 35 40 45

Pro Leu Val Tyr Pro Gly Gly His Val Phe Leu Tyr Thr Leu Leu Tyr
 50 55 60

Tyr Leu Thr Asp Gly Gly Thr Asn Ile Val Arg Ala Gln Tyr Ile Phe
 65 70 75 80

Ala Phe Val Tyr Trp Ile Thr Thr Ala Ile Val Gly Tyr Leu Phe Lys
 85 90 95

Ile Val Arg Ala Pro Phe Tyr Ile Tyr Val Leu Leu Ile Leu Ser Lys
 100 105 110

Arg Leu His Ser Ile Phe Ile Leu Arg Leu Phe Asn Asp Gly Phe Asn
 115 120 125
 Ser Leu Phe Ser Ser Leu Phe Ile Leu Ser Ser Cys Lys Lys Lys Trp
 130 135 140
 Val Arg Ala Ser Ile Leu Leu Ser Val Ala Cys Ser Val Lys Met Ser
 145 150 155 160
 Ser Leu Leu Tyr Val Pro Ala Tyr Leu Val Leu Leu Gln Ile Leu
 165 170 175
 Gly Pro Lys Lys Thr Trp Met His Ile Phe Val Ile Ile Ile Val Gln
 180 185 190
 Ile Leu Phe Ser Ile Pro Phe Leu Ala Tyr Phe Trp Ser Tyr Trp Thr
 195 200 205
 Gln Ala Phe Asp Phe Gly Arg Ala Phe Asp Tyr Lys Trp Thr Val Asn
 210 215 220
 Trp Arg Phe Ile Pro Arg Ser Ile Phe Glu Ser Thr Ser Phe Ser Thr
 225 230 235 240
 Ser Ile Leu Phe Leu His Val Ala Leu Val Ala Phe Thr Cys Lys
 245 250 255
 His Trp Asn Lys Leu Ser Arg Ala Thr Pro Phe Ala Met Val Asn Ser
 260 265 270
 Met Leu Thr Leu Lys Pro Leu Pro Lys Leu Gln Leu Ala Thr Pro Asn
 275 280 285
 Phe Ile Phe Thr Ala Leu Ala Thr Ser Asn Leu Ile Gly Ile Leu Cys
 290 295 300
 Ala Arg Ser Leu His Tyr Gln Phe Tyr Ala Trp Phe Ala Trp Tyr Ser
 305 310 315 320
 Pro Tyr Leu Cys Tyr Gln Ala Ser Phe Pro Ala Pro Ile Val Ile Gly
 325 330 335
 Leu Trp Met Leu Gln Glu Tyr Ala Trp Asn Val Phe Pro Ser Thr Lys
 340 345 350
 Leu Ser Ser
 355

<210> 42
 <211> 390
 <212> PRT
 <213> Pichia pastoris

<220>
 <221> MOD_RES

<222> (176)..(190)

<223> Variable amino acid

<220>

<221> MOD_RES

<222> (202)..(213)

<223> Variable amino acid

<400> 42

Leu Trp Leu Ala Asp Ser Ile Val Ile Lys Val Ile Ile Gly Thr Val
1 5 10 15Ser Tyr Thr Asp Ile Asp Phe Ser Ser Tyr Met Gln Gln Ile Phe Lys
20 25 30Ile Arg Gln Gly Glu Leu Asp Tyr Ser Asn Ile Phe Gly Asp Thr Gly
35 40 45Pro Leu Val Tyr Pro Ala Gly His Val His Ala Tyr Ser Val Leu Ser
50 55 60Trp Tyr Ser Asp Gly Gly Glu Asp Val Ser Phe Val Gln Gln Ala Phe
65 70 75 80Gly Trp Leu Tyr Leu Gly Cys Leu Leu Leu Ser Ile Ser Ser Tyr Phe
85 90 95Phe Ser Gly Leu Gly Lys Ile Pro Pro Val Tyr Phe Val Leu Leu Val
100 105 110Ala Ser Lys Arg Leu His Ser Ile Phe Val Leu Arg Leu Phe Asn Asp
115 120 125Cys Leu Thr Thr Phe Leu Met Leu Ala Thr Ile Ile Ile Leu Gln Gln
130 135 140Ala Ser Ser Trp Arg Lys Asp Gly Thr Thr Ile Pro Leu Ser Val Pro
145 150 155 160Asp Ala Ala Asp Thr Tyr Ser Leu Ala Ile Ser Val Lys Met Asn Xaa
165 170 175Xaa Xaa Cys Asp
180 185 190Glu Asn Leu Ile Lys Ala Leu Ala Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa
195 200 205Xaa Xaa Xaa Xaa Xaa Tyr Ser Phe Ile Leu Pro Leu His Tyr Asp Asp
210 215 220Gln Ala Asn Glu Ile Arg Ser Ala Tyr Phe Arg Gln Ala Phe Asp Phe
225 230 235 240Ser Arg Gln Phe Leu Tyr Lys Trp Thr Val Asn Trp Arg Phe Leu Ser
245 250 255

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Gln Glu Thr Phe Asn Asn Val His Phe His Gln Leu Leu Phe Ala Leu
260 265 270

His Ile Ile Thr Leu Val Leu Phe Ile Leu Lys Phe Leu Ser Pro Lys
275 280 285

Asn Ile Gly Lys Pro Leu Gly Arg Phe Val Leu Asp Ile Phe Lys Phe
290 295 300

Trp Lys Pro Thr Leu Ser Pro Thr Asn Ile Ile Asn Asp Pro Glu Arg
305 310 315 320

Ser Pro Asp Phe Val Tyr Thr Val Met Ala Thr Thr Asn Leu Ile Gly
325 330 335

Val Leu Phe Ala Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr Ala
340 345 350

Phe Ser Leu Pro Tyr Leu Leu Tyr Lys Ala Arg Leu Asn Phe Ile Ala
355 360 365

Ser Ile Ile Val Tyr Ala Ala His Glu Tyr Cys Trp Leu Val Phe Pro
370 375 380

Ala Thr Glu Gln Ser Ser
385 390

<210> 43

<211> 363

<212> PRT

<213> Arabidopsis thaliana

<400> 43

Leu Ile Leu Ala Asp Ala Ile Leu Val Ala Leu Ile Ile Ala Tyr Val
1 5 10 15

Pro Tyr Thr Lys Ile Asp Trp Asp Ala Tyr Met Ser Gln Val Ser Gly
20 25 30

Phe Leu Gly Gly Glu Arg Asp Tyr Gly Asn Leu Lys Gly Asp Thr Gly
35 40 45

Pro Leu Val Tyr Pro Ala Gly Phe Leu Tyr Val Tyr Ser Ala Val Gln
50 55 60

Asn Leu Thr Gly Gly Glu Val Tyr Pro Ala Gln Ile Leu Phe Gly Val
65 70 75 80

Leu Tyr Ile Val Asn Leu Gly Ile Val Leu Ile Ile Tyr Val Lys Thr
85 90 95

Asp Val Val Pro Trp Trp Ala Leu Ser Leu Leu Cys Leu Ser Lys Arg
100 105 110

Ile His Ser Ile Phe Val Leu Arg Leu Phe Asn Asp Cys Phe Ala Met
115 120 125

Thr Leu Leu His Ala Ser Met Ala Leu Phe Leu Tyr Arg Lys Trp His
 130 135 140
 Leu Gly Met Leu Val Phe Ser Gly Ala Val Ser Val Lys Met Asn Val
 145 150 155 160
 Leu Leu Tyr Ala Pro Thr Leu Leu Leu Leu Lys Ala Met Asn
 165 170 175
 Ile Ile Gly Val Val Ser Ala Leu Ala Gly Ala Ala Leu Ala Gln Ile
 180 185 190
 Leu Val Gly Leu Pro Phe Leu Ile Thr Tyr Pro Val Ser Tyr Ile Ala
 195 200 205
 Asn Ala Phe Asp Leu Gly Arg Val Phe Ile His Phe Trp Ser Val Asn
 210 215 220
 Phe Lys Phe Val Pro Glu Arg Val Phe Val Ser Lys Glu Phe Ala Val
 225 230 235 240
 Cys Leu Leu Ile Ala His Leu Phe Leu Leu Val Ala Phe Ala Asn Tyr
 245 250 255
 Lys Trp Cys Lys His Glu Gly Gly Ile Ile Gly Phe Met Arg Ser Arg
 260 265 270
 His Phe Phe Leu Thr Leu Pro Ser Ser Leu Ser Phe Ser Asp Val Ser
 275 280 285
 Ala Ser Arg Ile Ile Thr Lys Glu His Val Val Thr Ala Met Phe Val
 290 295 300
 Gly Asn Phe Ile Gly Ile Val Phe Ala Arg Ser Leu His Tyr Gln Phe
 305 310 315 320
 Tyr Ser Trp Tyr Phe Tyr Ser Leu Pro Tyr Leu Leu Trp Arg Thr Pro
 325 330 335
 Phe Pro Thr Trp Leu Arg Leu Ile Met Phe Leu Gly Ile Glu Leu Cys
 340 345 350
 Trp Asn Val Tyr Pro Ser Thr Pro Ser Ser Ser
 355 360

<210> 44

<211> 428

<212> DNA

<213> Kluyveromyces lactis

<400> 44

tttgttaca agctgatacc aacgaacatg aatacaccgg caggtttact gaagattggc 60
 aaagctaacc ttttacatcc ttttaccatcc gctgtattca gtgcgatgag agtaaacgca 120
 gaacaaattg catacatttt acttgttacc aattacattt gacttactt tgctcgatca 180
 ttacactacc aattccatcc ttggtaccat tggacgttac cagttactt gaattgggcc 240
 aatgttccgt atccgctatg tttgttatgg tacctaacac atgagtgggtg ctggAACAGC 300
 tatccggccaa acgctactgc atccacactg ctacacgcgt gtaacacata ctgttatgg 360

ctgtattctt aagaggaccc gcaaactcga aaagtggtga taacgaaaca acacacgaga 420
 aagctgag 428

<210> 45
 <211> 141
 <212> PRT
 <213> Kluyveromyces lactis

<400> 45
 Phe Val Tyr Lys Leu Ile Pro Thr Asn Met Asn Thr Pro Ala Gly Leu
 1 5 10 15

Leu Lys Ile Gly Lys Ala Asn Leu Leu His Pro Phe Thr Asp Ala Val
 20 25 30

Phe Ser Ala Met Arg Val Asn Ala Glu Gln Ile Ala Tyr Ile Leu Leu
 35 40 45

Val Thr Asn Tyr Ile Gly Val Leu Phe Ala Arg Ser Leu His Tyr Gln
 50 55 60

Phe Leu Ser Trp Tyr His Trp Thr Leu Pro Val Leu Leu Asn Trp Ala
 65 70 75 80

Asn Val Pro Tyr Pro Leu Cys Val Leu Trp Tyr Leu Thr His Glu Trp
 85 90 95

Cys Trp Asn Ser Tyr Pro Pro Asn Ala Thr Ala Ser Thr Leu Leu His
 100 105 110

Ala Cys Asn Thr Tyr Cys Tyr Trp Leu Tyr Ser Glu Asp Pro Gln Thr
 115 120 125

Arg Lys Val Val Ile Thr Lys Gln His Thr Arg Lys Leu
 130 135 140

<210> 46
 <211> 118
 <212> PRT
 <213> Kluyveromyces lactis

<400> 46
 Ala Asn Leu Leu His Pro Phe Thr Asp Ala Val Phe Ser Ala Met Arg
 1 5 10 15

Val Asn Ala Glu Gln Ile Ala Tyr Ile Leu Leu Val Thr Asn Tyr Ile
 20 25 30

Gly Val Leu Phe Ala Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr
 35 40 45

His Trp Thr Leu Pro Val Leu Leu Asn Trp Ala Asn Val Pro Tyr Pro
 50 55 60

Leu Cys Val Leu Trp Tyr Leu Thr His Glu Trp Cys Trp Asn Ser Tyr
 65 70 75 80

Pro Pro Asn Ala Thr Ala Ser Thr Leu Leu His Ala Cys Asn Thr Tyr
 85 90 95

Cys Tyr Trp Leu Tyr Ser Glu Asp Pro Gln Thr Arg Lys Val Val Ile
 100 105 110

Thr Lys Gln His Thr Arg
 115

<210> 47

<211> 117

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 47

Ser Ser Leu Cys His Pro Leu Arg Lys Asn Ala Val Leu Asn Ala Asn
 1 5 10 15

Pro Ala Lys Thr Ile Pro Phe Val Leu Ile Ala Ser Asn Phe Ile Gly
 20 25 30

Val Leu Phe Ser Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr His
 35 40 45

Trp Thr Leu Pro Ile Leu Ile Phe Trp Ser Gly Met Pro Phe Phe Val
 50 55 60

Gly Pro Ile Trp Tyr Val Leu His Glu Trp Cys Trp Asn Ser Tyr Pro
 65 70 75 80

Pro Asn Ser Gln Ala Ser Thr Leu Leu Leu Ala Leu Asn Thr Val Leu
 85 90 95

Leu Leu Leu Ala Leu Thr Gln Leu Ser Gly Ser Val Ala Leu Ala
 100 105 110

Lys Ser His Leu Arg
 115

<210> 48

<211> 113

<212> PRT

<213> *Kluyveromyces lactis*

<400> 48

Phe Thr Asp Ala Val Phe Ser Ala Met Arg Val Asn Ala Glu Gln Ile
 1 5 10 15

Ala Tyr Ile Leu Leu Val Thr Asn Tyr Ile Gly Val Leu Phe Ala Arg
 20 25 30

Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro Val
 35 40 45

Leu Leu Asn Trp Ala Asn Val Pro Tyr Pro Leu Cys Val Leu Trp Tyr
 50 55 60

Leu Thr His Glu Trp Cys Trp Asn Ser Tyr Pro Pro Asn Ala Thr Ala
 65 70 75 80

Ser Thr Leu Leu His Ala Cys Asn Thr Tyr Cys Tyr Trp Leu Tyr Ser
 85 90 95

Glu Asp Pro Gln Thr Arg Lys Val Val Ile Thr Lys Gln His Thr Arg
 100 105 110

Lys

<210> 49

<211> 106

<212> PRT

<213> Arabidopsis thaliana

<400> 49

Phe Ser Asp Val Ser Ala Ser Arg Ile Ile Thr Lys Glu His Val Val
 1 5 10 15

Thr Ala Met Phe Val Gly Asn Phe Ile Gly Ile Val Phe Ala Arg Ser
 20 25 30

Leu His Tyr Gln Phe Tyr Ser Trp Tyr Phe Tyr Ser Leu Pro Tyr Leu
 35 40 45

Leu Trp Arg Thr Pro Phe Pro Thr Trp Leu Arg Leu Ile Met Phe Leu
 50 55 60

Gly Ile Glu Leu Cys Trp Asn Val Tyr Pro Ser Thr Pro Ser Ser Ser
 65 70 75 80

Gly Leu Leu Leu Cys Leu His Leu Ile Ile Leu Val Gly Leu Trp Leu
 85 90 95

Ala Pro Ser Val Asp Pro Tyr Gln Leu Lys
 100 105

<210> 50

<211> 1668

<212> DNA

<213> Saccharomyces cerevisiae

<400> 50

atgaattgca aggcggtaac cattagttta ttactgttgt tatttttaac aagagtatat 60
 attcagccga cattctcggt aatttcagat tgcgatgaaa cttttaatta ttgggaacca 120
 ttaaatttat tggtacgtgg atttggtaaa caaacctggg aatattcacc cgagtattct 180
 attagatcat gggctttctt attaccttt tactgtattc tttatccagt aaacaaaattt 240
 actgacctag aaagtcatgg gaacttttc atcacaagag catgcttagg ctttttttagt 300
 tttatcatgg aattttaact acatcgtaa attgcaggca gcttggcatt gcaaatcgca 360
 aatatttgg a tattttcca attgttaat ccgggctggt tccatgcattc tggaaat 420
 ttgccttctg ccgttgccat gttgtgtat gtaggtgcca ccagacactc tctacgctat 480

ctgtccactg ggtctacttc taactttacg aaaagtttag cgtacaattt cctggctagt 540
 atactaggct ggcattttgt ttaattttta agcttgccat tatgtttaca ttaccttttc 600
 aaccatagaa ttatttctac catcagaacc gcattcgact gctgtttgat atttcattg 660
 actgcatttg ctgtgattgt cactgacagt atatttacg ggaagcttgc tcctgtatca 720
 tggAACATCT tattttacaa tgtcatataat gcaagtggagg aatctggccc aaatattttc 780
 ggggttggc catggtaacta ctatccacta aattttgtac tgaattttcc actgcctgtg 840
 ctatgttttag ctatttggg aattttccat tttagattat ggccattatg ggcattcatta 900
 ttccatcgaa ttgcgtttt cactcaacaa cctcacaacaa agggaaagatt tctctatcca 960
 atttacgggt taataacttt gagtgcagaat atcgcctttt acaaagtgtt gaatctattc 1020
 aatagaaagc cgattcttaa aaaaggata aagttgtcag ttttattaaat tggcaggc 1080
 caggcaatgt cacggatagt ggctttggg aacaattaca cagctcctat agccgtctac 1140
 gagcaatttt ctcaactaaa tcaagggtgtt gtgaaggcac cggttagtcaa tggatgtacg 1200
 ggacgtgaat ggtatcactt cccaaggttt ttcctgctgc cagataatca taggctaaaa 1260
 tttgttaat ctggatttga tggcttctt ccaggtgatt ttccagagag tggatgttatt 1320
 ttcaaaaaga tttagaacttt acctaaggga atgaataaca agaatatata tgataccgg 1380
 aaagagtggc cgatcaactag atgtgattat ttatttgaca tcgtcgcccc aataaaattta 1440
 acaaaaagacg ttttcaaccc tctacatctg atggataact ggaataagct ggcattgtgct 1500
 gcattcatcg acggtgaaaa ttctaaagatt ttggtagag cattttacgt accggagcca 1560
 atcaaccgaa tcatgcaaat agtttacca aaacaatggg atcaagtgtt cgggtttcgt 1620
 tacatttgatt actgtttgtt tgaaaaacca actgagacta ctaattga 1668

<210> 51

<211> 555

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 51

Met	Asn	Cys	Lys	Ala	Val	Thr	Ile	Ser	Leu	Leu	Leu	Leu	Phe	Leu
1									10					15

Thr	Arg	Val	Tyr	Ile	Gln	Pro	Thr	Phe	Ser	Leu	Ile	Ser	Asp	Cys	Asp
									20				30		

Glu	Thr	Phe	Asn	Tyr	Trp	Glu	Pro	Leu	Asn	Leu	Leu	Val	Arg	Gly	Phe
									35			40		45	

Gly	Lys	Gln	Thr	Trp	Glu	Tyr	Ser	Pro	Glu	Tyr	Ser	Ile	Arg	Ser	Trp
									50			55		60	

Ala	Phe	Leu	Leu	Pro	Phe	Tyr	Cys	Ile	Leu	Tyr	Pro	Val	Asn	Lys	Phe
								65			70		75		80

Thr	Asp	Leu	Glu	Ser	His	Trp	Asn	Phe	Phe	Ile	Thr	Arg	Ala	Cys	Leu
								85			90		95		

Gly	Phe	Phe	Ser	Phe	Ile	Met	Glu	Phe	Lys	Leu	His	Arg	Glu	Ile	Ala
								100			105		110		

Gly	Ser	Leu	Ala	Leu	Gln	Ile	Ala	Asn	Ile	Trp	Ile	Ile	Phe	Gln	Leu
								115			120		125		

Phe	Asn	Pro	Gly	Trp	Phe	His	Ala	Ser	Val	Glu	Leu	Leu	Pro	Ser	Ala
								130			135		140		

Val	Ala	Met	Leu	Leu	Tyr	Val	Gly	Ala	Thr	Arg	His	Ser	Leu	Arg	Tyr
								145			150		155		160

Leu Ser Thr Gly Ser Thr Ser Asn Phe Thr Lys Ser Leu Ala Tyr Asn
 165 170 175
 Phe Leu Ala Ser Ile Leu Gly Trp Pro Phe Val Leu Ile Leu Ser Leu
 180 185 190
 Pro Leu Cys Leu His Tyr Leu Phe Asn His Arg Ile Ile Ser Thr Ile
 195 200 205
 Arg Thr Ala Phe Asp Cys Cys Leu Ile Phe Ser Leu Thr Ala Phe Ala
 210 215 220
 Val Ile Val Thr Asp Ser Ile Phe Tyr Gly Lys Leu Ala Pro Val Ser
 225 230 235 240
 Trp Asn Ile Leu Phe Tyr Asn Val Ile Asn Ala Ser Glu Glu Ser Gly
 245 250 255
 Pro Asn Ile Phe Gly Val Glu Pro Trp Tyr Tyr Tyr Pro Leu Asn Leu
 260 265 270
 Leu Leu Asn Phe Pro Leu Pro Val Leu Val Leu Ala Ile Leu Gly Ile
 275 280 285
 Phe His Leu Arg Leu Trp Pro Leu Trp Ala Ser Leu Phe Thr Trp Ile
 290 295 300
 Ala Val Phe Thr Gln Gln Pro His Lys Glu Glu Arg Phe Leu Tyr Pro
 305 310 315 320
 Ile Tyr Gly Leu Ile Thr Leu Ser Ala Ser Ile Ala Phe Tyr Lys Val
 325 330 335
 Leu Asn Leu Phe Asn Arg Lys Pro Ile Leu Lys Lys Gly Ile Lys Leu
 340 345 350
 Ser Val Leu Leu Ile Val Ala Gly Gln Ala Met Ser Arg Ile Val Ala
 355 360 365
 Leu Val Asn Asn Tyr Thr Ala Pro Ile Ala Val Tyr Glu Gln Phe Ser
 370 375 380
 Ser Leu Asn Gln Gly Gly Val Lys Ala Pro Val Val Asn Val Cys Thr
 385 390 395 400
 Gly Arg Glu Trp Tyr His Phe Pro Ser Ser Phe Leu Leu Pro Asp Asn
 405 410 415
 His Arg Leu Lys Phe Val Lys Ser Gly Phe Asp Gly Leu Leu Pro Gly
 420 425 430
 Asp Phe Pro Glu Ser Gly Ser Ile Phe Lys Lys Ile Arg Thr Leu Pro
 435 440 445
 Lys Gly Met Asn Asn Lys Asn Ile Tyr Asp Thr Gly Lys Glu Trp Pro
 450 455 460

Ile Thr Arg Cys Asp Tyr Phe Ile Asp Ile Val Ala Pro Ile Asn Leu
 465 470 475 480

Thr Lys Asp Val Phe Asn Pro Leu His Leu Met Asp Asn Trp Asn Lys
 485 490 495

Leu Ala Cys Ala Ala Phe Ile Asp Gly Glu Asn Ser Lys Ile Leu Gly
 500 505 510

Arg Ala Phe Tyr Val Pro Glu Pro Ile Asn Arg Ile Met Gln Ile Val
 515 520 525

Leu Pro Lys Gln Trp Asn Gln Val Tyr Gly Val Arg Tyr Ile Asp Tyr
 530 535 540

Cys Leu Phe Glu Lys Pro Thr Glu Thr Thr Asn
 545 550 555

<210> 52

<211> 600

<212> DNA

<213> *Pichia pastoris*

<400> 52

tggccttcct gtctgctcga tacttccttt tacagtaacc aacatacatg ttctccaaca 60
 tgctcttgta tgatttggcc tattctatct tgagacttga tatcaacctt ctatggatt 120
 atttcagact gtgatgaagt gttcaactac tgggagccac tcaacttcat gcttagaggg 180
 tttggaaaac agacttggga gtatttcca gagtatgcca tccgatcttgc gtcctatcta 240
 gtgccacttt ggatagcagg ctatccacca ttgttcctgg atatcccttc ttactacttt 300
 ttctactttt tcagactact gctggttatt ttttcattgg ttgcagaagt caagttgtac 360
 catagttga agaaaaatgt cagcagtaag atcagtttctt ggtacccctt atttacaacc 420
 gttgctccag gaatgtctca tagcagcata gccttattac catcctttt tgctatgg 480
 tgtcacactt ttgccattag atacgtcatt gattacctac aattaccaac attaatgcgc 540
 acaatcagag agactgctgc catctcacca gctcacaaac aacaacttagc caactcttc 600

<210> 53

<211> 199

<212> PRT

<213> *Pichia pastoris*

<400> 53

Trp Pro Ser Cys Leu Leu Asp Thr Ser Phe Tyr Ser Asn Gln His Thr
 1 5 10 15

Cys Ser Pro Thr Cys Ser Cys Met Tyr Trp Pro Ile Leu Ser Asp Leu
 20 25 30

Ile Ser Thr Phe Tyr Gly Ile Ser Asp Cys Asp Glu Val Phe Asn
 35 40 45

Tyr Trp Glu Pro Leu Asn Phe Met Leu Arg Gly Phe Gly Lys Gln Thr
 50 55 60

Trp Glu Tyr Ser Pro Glu Tyr Ala Ile Arg Ser Trp Ser Tyr Leu Val
 65 70 75 80

Pro Leu Trp Ile Ala Gly Tyr Pro Pro Leu Phe Leu Asp Ile Pro Ser
 85 90 95

Tyr Tyr Phe Phe Tyr Phe Phe Arg Leu Leu Leu Val Ile Phe Ser Leu
 100 105 110

Val Ala Glu Val Lys Leu Tyr His Ser Leu Lys Lys Asn Val Ser Ser
 115 120 125

Lys Ile Ser Phe Trp Tyr Leu Leu Phe Thr Thr Val Ala Pro Gly Met
 130 135 140

Ser His Ser Thr Ile Ala Leu Leu Pro Ser Ser Phe Ala Met Val Cys
 145 150 155 160

His Thr Phe Ala Ile Arg Tyr Val Ile Asp Tyr Leu Gln Leu Pro Thr
 165 170 175

Leu Met Arg Thr Ile Arg Glu Thr Ala Ala Ile Ser Pro Ala His Lys
 180 185 190

Gln Gln Leu Ala Asn Ser Leu
 195

<210> 54

<211> 140

<212> PRT

<213> *Pichia pastoris*

<220>

<221> MOD_RES

<222> (65)..(71)

<223> Variable amino acid

<400> 54

Ile Ser Thr Phe Tyr Gly Ile Ile Ser Asp Cys Asp Glu Val Phe Asn
 1 5 10 15

Tyr Trp Glu Pro Leu Asn Phe Met Leu Arg Gly Phe Gly Lys Gln Thr
 20 25 30

Trp Glu Tyr Ser Pro Glu Tyr Ala Ile Arg Ser Trp Ser Tyr Leu Val
 35 40 45

Pro Leu Trp Ile Ala Gly Tyr Pro Pro Leu Phe Leu Asp Ile Pro Ser
 50 55 60

Xaa Xaa Xaa Xaa Xaa Xaa Arg Leu Leu Leu Val Ile Phe Ser Leu
 65 70 75 80

Val Ala Glu Val Lys Leu Tyr His Ser Leu Lys Lys Asn Val Ser Ser
 85 90 95

Lys Ile Ser Phe Trp Tyr Leu Leu Phe Thr Thr Val Ala Pro Gly Met
 100 105 110

Ser His Ser Thr Ile Ala Leu Leu Pro Ser Ser Phe Ala Met Val Cys
 115 120 125

His Thr Phe Ala Ile Arg Tyr Val Ile Asp Tyr Leu
 130 135 140

<210> 55

<211> 141

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 55

Ile Gln Pro Thr Phe Ser Leu Ile Ser Asp Cys Asp Glu Thr Phe Asn
 1 5 10 15

Tyr Trp Glu Pro Leu Asn Leu Leu Val Arg Gly Phe Gly Lys Gln Thr
 20 25 30

Trp Glu Tyr Ser Pro Glu Tyr Ser Ile Arg Ser Trp Ala Phe Leu Leu
 35 40 45

Pro Phe Tyr Cys Ile Leu Tyr Pro Val Asn Lys Phe Thr Asp Leu Glu
 50 55 60

Ser His Trp Asn Phe Phe Ile Thr Arg Ala Cys Leu Gly Phe Phe Ser
 65 70 75 80

Phe Ile Met Glu Phe Lys Leu His Arg Glu Ile Ala Gly Ser Leu Ala
 85 90 95

Leu Gln Ile Ala Asn Ile Trp Ile Ile Phe Gln Leu Phe Asn Pro Gly
 100 105 110

Trp Phe His Ala Ser Val Glu Leu Leu Pro Ser Ala Val Ala Met Leu
 115 120 125

Leu Tyr Val Gly Ala Thr Arg His Ser Leu Arg Tyr Leu
 130 135 140

<210> 56

<211> 127

<212> PRT

<213> *Pichia pastoris*

<220>

<221> MOD_RES

<222> (66)...(72)

<223> Variable amino acid

<400> 56

Leu Ile Ser Thr Phe Tyr Gly Ile Ile Ser Asp Cys Asp Glu Val Phe
 1 5 10 15

Asn Tyr Trp Glu Pro Leu Asn Phe Met Leu Arg Gly Phe Gly Lys Gln
 20 25 30

Thr Trp Glu Tyr Ser Pro Glu Tyr Ala Ile Arg Ser Trp Ser Tyr Leu
 35 40 45

Val Pro Leu Trp Ile Ala Gly Tyr Pro Pro Leu Phe Leu Asp Ile Pro
 50 55 60

Ser Xaa Xaa Xaa Xaa Xaa Xaa Arg Leu Leu Leu Val Ile Phe Ser
 65 70 75 80

Leu Val Ala Glu Val Lys Leu Tyr His Ser Leu Lys Lys Asn Val Ser
 85 90 95

Ser Lys Ile Ser Phe Trp Tyr Leu Leu Phe Thr Thr Val Ala Pro Gly
 100 105 110

Met Ser His Ser Thr Ile Ala Leu Leu Pro Ser Ser Phe Ala Met
 115 120 125

<210> 57

<211> 127

<212> PRT

<213> Anopheles gambiae

<400> 57

Leu Gln Ser Ala Leu Tyr Ser Ile Ile Ser Asp Cys Asp Glu Thr Tyr
 1 5 10 15

Asn Tyr Trp Glu Pro Leu His Tyr Leu Leu Lys Gly Lys Gly Phe Gln
 20 25 30

Thr Trp Glu Tyr Ser Pro Glu Phe Ala Leu Arg Ser Tyr Ser Tyr Leu
 35 40 45

Trp Leu His Gly Leu Pro Ala Lys Val Leu Gln Leu Met Thr Asp Asn
 50 55 60

Gly Val Leu Ile Phe Tyr Phe Val Arg Cys Leu Leu Ala Val Thr Cys
 65 70 75 80

Ala Leu Leu Glu Tyr Arg Leu Tyr Arg Ile Leu Gly Arg Lys Cys Gly
 85 90 95

Gly Gly Val Ala Ser Leu Trp Leu Leu Phe Gln Leu Thr Ser Ala Gly
 100 105 110

Met Phe Ile Ser Ser Ala Ala Leu Leu Pro Ser Ser Phe Ser Met
 115 120 125

<210> 58

<211> 157

<212> PRT

<213> Pichia pastoris

<220>

<221> MOD_RES

<222> (66)..(72)

<223> Variable amino acid

<400> 58

Leu	Ile	Ser	Thr	Phe	Tyr	Gly	Ile	Ile	Ser	Asp	Cys	Asp	Glu	Val	Phe
1				5					10				15		

Asn	Tyr	Trp	Glu	Pro	Leu	Asn	Phe	Met	Leu	Arg	Gly	Phe	Gly	Lys	Gln
					20			25				30			

Thr	Trp	Glu	Tyr	Ser	Pro	Glu	Tyr	Ala	Ile	Arg	Ser	Trp	Ser	Tyr	Leu
						35		40				45			

Val	Pro	Leu	Trp	Ile	Ala	Gly	Tyr	Pro	Pro	Leu	Phe	Leu	Asp	Ile	Pro
						50		55		60					

Ser	Xaa	Arg	Leu	Leu	Leu	Val	Ile	Phe	Ser						
							65		70	75		80			

Leu	Val	Ala	Glu	Val	Lys	Leu	Tyr	His	Ser	Leu	Lys	Lys	Asn	Val	Ser
					85				90		95				

Ser	Lys	Ile	Ser	Phe	Trp	Tyr	Leu	Leu	Phe	Thr	Thr	Val	Ala	Pro	Gly
				100				105		110					

Met	Ser	His	Ser	Thr	Ile	Ala	Leu	Leu	Pro	Ser	Ser	Phe	Ala	Met	Val
					115			120			125				

Cys	His	Thr	Phe	Ala	Ile	Arg	Tyr	Val	Ile	Asp	Tyr	Leu	Gln	Leu	Pro
					130			135			140				

Thr	Leu	Met	Arg	Thr	Ile	Arg	Glu	Thr	Ala	Ala	Ile	Ser			
					145			150		155					

<210> 59

<211> 154

<212> PRT

<213> Schizosaccharomyces pombe

<400> 59

Leu	Thr	Ser	Ala	Ser	Phe	Arg	Val	Ile	Asp	Asp	Cys	Asp	Glu	Val	Tyr
1					5				10				15		

Asn	Tyr	Trp	Glu	Pro	Leu	His	Tyr	Leu	Leu	Tyr	Gly	Tyr	Gly	Leu	Gln
					20			25			30				

Thr	Trp	Glu	Tyr	Ser	Pro	Glu	Tyr	Ala	Ile	Arg	Ser	Trp	Phe	Tyr	Ile
					35			40			45				

Ala	Leu	His	Ala	Val	Pro	Gly	Phe	Leu	Ala	Arg	Gly	Leu	Gly	Leu	Ser
					50			55			60				

Arg	Leu	His	Val	Phe	Tyr	Phe	Ile	Arg	Gly	Val	Leu	Ala	Cys	Phe	Ser
					65			70		75		80			

Ala	Phe	Cys	Glu	Thr	Asn	Leu	Ile	Leu	Ala	Val	Ala	Arg	Asn	Phe	Asn
						85			90			95			

Arg Ala Val Ala Leu His Leu Thr Ser Val Leu Phe Val Asn Ser Gly
 100 105 110

Met Trp Ser Ala Ser Thr Ser Phe Leu Pro Ser Ser Phe Ala Met Asn
 115 120 125

Met Val Thr Leu Ala Leu Ser Ala Gln Leu Ser Pro Pro Ser Thr Lys
 130 135 140

Arg Thr Val Lys Val Val Ser Phe Ile Thr
 145 150

<210> 60

<211> 141

<212> PRT

<213> Pichia pastoris

<220>

<221> MOD_RES

<222> (80)..(86)

<223> Variable amino acid

<400> 60

Ser Pro Thr Cys Ser Cys Met Tyr Trp Pro Ile Leu Ser Asp Leu Ile
 1 5 10 15

Ser Thr Phe Tyr Gly Ile Ile Ser Asp Cys Asp Glu Val Phe Asn Tyr
 20 25 30

Trp Glu Pro Leu Asn Phe Met Leu Arg Gly Phe Gly Lys Gln Thr Trp
 35 40 45

Glu Tyr Ser Pro Glu Tyr Ala Ile Arg Ser Trp Ser Tyr Leu Val Pro
 50 55 60

Leu Trp Ile Ala Gly Tyr Pro Pro Leu Phe Leu Asp Ile Pro Ser Xaa
 65 70 75 80

Xaa Xaa Xaa Xaa Xaa Arg Leu Leu Leu Val Ile Phe Ser Leu Val
 85 90 95

Ala Glu Val Lys Leu Tyr His Ser Leu Lys Lys Asn Val Ser Ser Lys
 100 105 110

Ile Ser Phe Trp Tyr Leu Leu Phe Thr Thr Val Ala Pro Gly Met Ser
 115 120 125

His Ser Thr Ile Ala Leu Leu Pro Ser Ser Phe Ala Met
 130 135 140

<210> 61

<211> 143

<212> PRT

<213> Mus musculus

<400> 61
 Ala Pro Glu Gly Ser Thr Ala Phe Lys Cys Leu Leu Ser Ala Arg Leu
 1 5 10 15
 Cys Ala Ala Leu Leu Ser Asn Ile Ser Asp Cys Asp Glu Thr Phe Asn
 20 25 30
 Tyr Trp Glu Pro Thr His Tyr Leu Ile Tyr Gly Lys Gly Phe Gln Thr
 35 40 45
 Trp Glu Tyr Ser Pro Val Tyr Ala Ile Arg Ser Tyr Ala Tyr Leu Leu
 50 55 60
 Leu His Ala Trp Pro Ala Ala Phe His Ala Arg Ile Leu Gln Thr Asn
 65 70 75 80
 Lys Ile Leu Val Phe Tyr Phe Leu Arg Cys Leu Leu Ala Phe Val Ser
 85 90 95
 Cys Val Cys Glu Leu Tyr Phe Tyr Lys Ala Val Cys Lys Lys Phe Gly
 100 105 110
 Leu His Val Ser Arg Met Met Leu Ala Phe Leu Val Leu Ser Thr Gly
 115 120 125
 Met Phe Cys Ser Ser Ser Ala Phe Leu Pro Ser Ser Phe Cys Met
 130 135 140

<210> 62
 <211> 141
 <212> PRT
 <213> *Pichia pastoris*

<220>
 <221> MOD_RES
 <222> (80)..(86)
 <223> Variable amino acid

<400> 62
 Ser Pro Thr Cys Ser Cys Met Tyr Trp Pro Ile Leu Ser Asp Leu Ile
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 Ser Thr Phe Tyr Gly Ile Ile Ser Asp Cys Asp Glu Val Phe Asn Tyr
 20 25 30
 Trp Glu Pro Leu Asn Phe Met Leu Arg Gly Phe Gly Lys Gln Thr Trp
 35 40 45
 Glu Tyr Ser Pro Glu Tyr Ala Ile Arg Ser Trp Ser Tyr Leu Val Pro
 50 55 60
 Leu Trp Ile Ala Gly Tyr Pro Pro Leu Phe Leu Asp Ile Pro Ser Xaa
 65 70 75 80
 Xaa Xaa Xaa Xaa Xaa Arg Leu Leu Leu Val Ile Phe Ser Leu Val
 85 90 95

Ala Glu Val Lys Leu Tyr His Ser Leu Lys Lys Asn Val Ser Ser Lys
 100 105 110

Ile Ser Phe Trp Tyr Leu Leu Phe Thr Thr Val Ala Pro Gly Met Ser
 115 120 125

His Ser Thr Ile Ala Leu Leu Pro Ser Ser Phe Ala Met
 130 135 140

<210> 63

<211> 143

<212> PRT

<213> Homo sapiens

<400> 63

Ala Pro Glu Gly Ser Thr Ala Phe Lys Cys Leu Leu Ser Ala Arg Leu
 1 5 10 15

Cys Ala Ala Leu Leu Ser Asn Ile Ser Asp Cys Asp Glu Thr Phe Asn
 20 25 30

Tyr Trp Glu Pro Thr His Tyr Leu Ile Tyr Gly Glu Gly Phe Gln Thr
 35 40 45

Trp Glu Tyr Ser Pro Ala Tyr Ala Ile Arg Ser Tyr Ala Tyr Leu Leu
 50 55 60

Leu His Ala Trp Pro Ala Ala Phe His Ala Arg Ile Leu Gln Thr Asn
 65 70 75 80

Lys Ile Leu Val Phe Tyr Phe Leu Arg Cys Leu Leu Ala Phe Val Ser
 85 90 95

Cys Ile Cys Glu Leu Tyr Phe Tyr Lys Ala Val Cys Lys Lys Phe Gly
 100 105 110

Leu His Val Ser Arg Met Met Leu Ala Phe Leu Val Leu Ser Thr Gly
 115 120 125

Met Phe Cys Ser Ser Ala Phe Leu Pro Ser Ser Phe Cys Met
 130 135 140

<210> 64

<211> 1656

<212> DNA

<213> Saccharomyces cerevisiae

<400> 64

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 tacagcgtat ttgatatatctc ccaatatgac cacttggaaat ttccctggagt agtccctaga 180
 acattcgttg gtgctgtat tattgcaatg ctttcgagac cttatctta cttgagttct 240
 ttgatccaaa cttccaggcc tacgtctata gatgttcaat tggtcgttag ggggattgtt 300
 ggcctcacca atgggctttc ttttatctat ttaaagaatt gtttgcaaga tatgtttgtat 360
 gaaatcactg aaaagaaaaaa ggaagaaaaat gaagacaagg atatatacat ttacgatagc 420
 gctggtacat ggtttctttt attttaattt ggcagtttcc acctcatgtt ctacagcact 480

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aggactctgc ctaatttgt catgactctg cctctaaccga acgtcgcatgggggggggt 540
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ctggaagtgt cagctctcag tgctggatt gctctatttgc gctcatctt caagaagatt 660
tctttattcg atgctatcaa attcggtatc ttggcttgg gacttggttc cgccatcagt 720
atcaccgttgc attcatattt ctggcaagaa tggtgtctac ctgaggtaga tggtttcttg 780
ttcaacgtgg ttgcgggta cgcttccaag tggggtgtgg agccagttac tgcttatttc 840
acgcattact tgagaatgat gttatgcca ccaactgttt tactattgaa ttacttcggc 900
tataaatttag cacctgcaaa attaaaaatt gtctcaactag catctttttt ccacattatc 960
gtcttatcct ttcaacctca caaagaatgg agattcatca tctacgctgt tccatctatc 1020
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accaatgttt tatgtttggc tatattgccc ttatctataa tgacccctt tttcatttca 1140
atggcgttct tggatataatc aagaatgaaat tatccaggcg gcgaggcttt aacttctttt 1200
aatgacatga ttgtggaaaaaa aaatattaca aacgctacag ttcatatcag cataccctct 1260
tgcacatgacag gtgtcactttt atttggtggaa ttgaactacag gtgtgtacgg catcaattac 1320
gataagactg aaaatacgcac ttactgcag gaaatgtggc ctccttgc ttcttgatc 1380
acccacggc caaccgcctc tcaattgcca ttgcagaata agactaccaa ccattgggag 1440
ctagttaaaca caacaaagat gtttactggaa ttggacccaa cctacattaa gaactttgtt 1500
ttccaagaga gagtgaatgt ttgtctcta ctcaaacaga tcatttcga caagacccct 1560
accgtttttt tggaaagaattt gacggccaaat tcgattgtta aaagcgatgt cttcttcacc 1620
tataagagaa tcaaacaaga tgaaaaaaact gattga 1665

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<210> 65

<211> 551

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 65

His Leu Ile Gln Ala Pro Phe Thr Lys Val Glu Glu Ser Phe Asn Ile
 20 25 30

Gln Ala Ile His Asp Ile Leu Thr Tyr Ser Val Phe Asp Ile Ser Gln
35 40 45

Tyr Asp His Leu Lys Phe Pro Gly Val Val Pro Arg Thr Phe Val Gly
50 55 60

Ala Val Ile Ile Ala Met Leu Ser Arg Pro Tyr Leu Tyr Leu Ser Ser
65 70 75 80

Leu Ile Gln Thr Ser Arg Pro Thr Ser Ile Asp Val Gln Leu Val Val
85 90 95

Arg Gly Ile Val Gly Leu Thr Asn Gly Leu Ser Phe Ile Tyr Leu Lys
 100 105 110

Asn Cys Leu Gln Asp Met Phe Asp Glu Ile Thr Glu Lys Lys Lys Glu
 115 120 125

Glu Asn Glu Asp Lys Asp Ile Tyr Ile Tyr Asp Ser Ala Gly Thr Trp
130 135 140

Phe Leu Leu Phe Leu Ile Gly Ser Phe His Leu Met Phe Tyr Ser Thr
 145 150 . 155 160

Arg Thr Leu Pro Asn Phe Val Met Thr Leu Pro Leu Thr Asn Val Ala
 165 170 175
 Leu Gly Trp Val Leu Leu Gly Arg Tyr Asn Ala Ala Ile Phe Leu Ser
 180 185 190
 Ala Leu Val Ala Ile Val Phe Arg Leu Glu Val Ser Ala Leu Ser Ala
 195 200 205
 Gly Ile Ala Leu Phe Ser Val Ile Phe Lys Lys Ile Ser Leu Phe Asp
 210 215 220
 Ala Ile Lys Phe Gly Ile Phe Gly Leu Gly Ser Ala Ile Ser
 225 230 235 240
 Ile Thr Val Asp Ser Tyr Phe Trp Gln Glu Trp Cys Leu Pro Glu Val
 245 250 255
 Asp Gly Phe Leu Phe Asn Val Val Ala Gly Tyr Ala Ser Lys Trp Gly
 260 265 270
 Val Glu Pro Val Thr Ala Tyr Phe Thr His Tyr Leu Arg Met Met Phe
 275 280 285
 Met Pro Pro Thr Val Leu Leu Asn Tyr Phe Gly Tyr Lys Leu Ala
 290 295 300
 Pro Ala Lys Leu Lys Ile Val Ser Leu Ala Ser Leu Phe His Ile Ile
 305 310 315 320
 Val Leu Ser Phe Gln Pro His Lys Glu Trp Arg Phe Ile Ile Tyr Ala
 325 330 335
 Val Pro Ser Ile Met Leu Leu Gly Ala Thr Gly Ala Ala His Leu Trp
 340 345 350
 Glu Asn Met Lys Val Lys Ile Thr Asn Val Leu Cys Leu Ala Ile
 355 360 365
 Leu Pro Leu Ser Ile Met Thr Ser Phe Phe Ile Ser Met Ala Phe Leu
 370 375 380
 Tyr Ile Ser Arg Met Asn Tyr Pro Gly Gly Glu Ala Leu Thr Ser Phe
 385 390 395 400
 Asn Asp Met Ile Val Glu Lys Asn Ile Thr Asn Ala Thr Val His Ile
 405 410 415
 Ser Ile Pro Pro Cys Met Thr Gly Val Thr Leu Phe Gly Glu Leu Asn
 420 425 430
 Tyr Gly Val Tyr Gly Ile Asn Tyr Asp Lys Thr Glu Asn Thr Thr Leu
 435 440 445
 Leu Gln Glu Met Trp Pro Ser Phe Asp Phe Leu Ile Thr His Glu Pro
 450 455 460

Thr Ala Ser Gln Leu Pro Phe Glu Asn Lys Thr Thr Asn His Trp Glu
 465 470 475 480

Leu Val Asn Thr Thr Lys Met Phe Thr Gly Phe Asp Pro Thr Tyr Ile
 485 490 495

Lys Asn Phe Val Phe Gln Glu Arg Val Asn Val Leu Ser Leu Leu Lys
 500 505 510

Gln Ile Ile Phe Asp Lys Thr Pro Thr Val Phe Leu Lys Glu Leu Thr
 515 520 525

Ala Asn Ser Ile Val Lys Ser Asp Val Phe Phe Thr Tyr Lys Arg Ile
 530 535 540

Lys Gln Asp Glu Lys Thr Asp
 545 550

<210> 66

<211> 840

<212> DNA

<213> Pichia pastoris

<400> 66

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 acttgtcata accatatactc cagtaacttgc acaactaccc aggagattca caatcgtaa 180
 agttgtcttt ttcttcctaa gtttcggctc tttgctcata tccctgtcgt ttctttcat 240
 ctcatcgat aactaccctg ggggtgaagc tttacagcat ttgaacgaga aactccttct 300
 actggaccaa agttccctac ctgttgatat taaggttcat atggatgtcc ctgcatgc 360
 gactgggtg actttatttg gttacttggta taactcaaaa ttgaacaatt taagaattgt 420
 ctatgataaa acagaagacg agtcgcttgc cacaatctgg gattcttca attatgtcat 480
 ctccgaaatt gacttggatt ctgcactgc tcccaaattgg gagggggatt ggctgaagat 540
 ttagttgtc caaggctaca acggcatcaa taaacaatct atcaaaaata caatttcaa 600
 ttatgaaata cttaaacggta tgataagaga cgcaacccaa cttgatgttg gatttattcg 660
 tacgtcttt cgatccttca taaaatttga tgataaaatta ttcattttag agaggagc 720
 tcaaacctgaa aaatatatac ctcatttggta caatttggtg taaagagtgt ggccgataga 780
 cttcttgtaa atcaggaaag ctacaattcc aattgctgca aaaaatacca atgcccataa 840

<210> 67

<211> 239

<212> PRT

<213> Pichia pastoris

<400> 67

Arg Met Ile Thr Glu Glu Leu Lys Ile Ser His Thr Phe Ile Val Thr
 1 5 10 15

Val Leu Ala Ile Ile Ala Phe Gln Pro His Lys Glu Trp Arg Phe Ile
 20 25 30

Val Tyr Ile Val Pro Pro Leu Val Ile Thr Ile Ser Thr Val Leu Ala
 35 40 45

Gln Leu Pro Arg Arg Phe Thr Ile Val Lys Val Ala Val Phe Leu Leu
 50 55 60

Ser Phe Gly Ser Leu Leu Ile Ser Leu Ser Phe Leu Phe Ile Ser Ser
 65 70 75 80
 Tyr Asn Tyr Pro Gly Gly Glu Ala Leu Gln His Leu Asn Glu Lys Leu
 85 90 95
 Leu Leu Leu Asp Gln Ser Ser Leu Pro Val Asp Ile Lys Val His Met
 100 105 110
 Asp Val Pro Ala Cys Met Thr Gly Val Thr Leu Phe Gly Tyr Leu Asp
 115 120 125
 Asn Ser Lys Leu Asn Asn Leu Arg Ile Val Tyr Asp Lys Thr Glu Asp
 130 135 140
 Glu Ser Leu Asp Thr Ile Trp Asp Ser Phe Asn Tyr Val Ile Ser Glu
 145 150 155 160
 Ile Asp Leu Asp Ser Ser Thr Ala Pro Lys Trp Glu Gly Asp Trp Leu
 165 170 175
 Lys Ile Asp Val Val Gln Gly Tyr Asn Gly Ile Asn Lys Gln Ser Ile
 180 185 190
 Lys Asn Thr Ile Phe Asn Tyr Gly Ile Leu Lys Arg Met Ile Arg Asp
 195 200 205
 Ala Thr Lys Leu Asp Val Gly Phe Ile Arg Thr Val Phe Arg Ser Phe
 210 215 220
 Ile Lys Phe Asp Asp Lys Leu Phe Ile Tyr Glu Arg Ser Ser Gln
 225 230 235

 <210> 68
 <211> 239
 <212> PRT
 <213> Pichia pastoris

 <220>
 <221> MOD_RES
 <222> (62)..(80)
 <223> Variable amino acid

 <400> 68
 Arg Met Ile Thr Glu Glu Leu Lys Ile Ser His Thr Phe Ile Val Thr
 1 5 10 15
 Val Leu Ala Ile Ile Ala Phe Gln Pro His Lys Glu Trp Arg Phe Ile
 20 25 30
 Val Tyr Ile Val Pro Pro Leu Val Ile Thr Ile Ser Thr Val Leu Ala
 35 40 45
 Gln Leu Pro Arg Arg Phe Thr Ile Val Lys Val Ala Val Xaa Xaa Xaa
 50 55 60

Xaa
 65 70 75 80

Tyr Asn Tyr Pro Gly Gly Glu Ala Leu Gln His Leu Asn Glu Lys Leu
 85 90 95

Leu Leu Leu Asp Gln Ser Ser Leu Pro Val Asp Ile Lys Val His Met
 100 105 110

Asp Val Pro Ala Cys Met Thr Gly Val Thr Leu Phe Gly Tyr Leu Asp
 115 120 125

Asn Ser Lys Leu Asn Asn Leu Arg Ile Val Tyr Asp Lys Thr Glu Asp
 130 135 140

Glu Ser Leu Asp Thr Ile Trp Asp Ser Phe Asn Tyr Val Ile Ser Glu
 145 150 155 160

Ile Asp Leu Asp Ser Ser Thr Ala Pro Lys Trp Glu Gly Asp Trp Leu
 165 170 175

Lys Ile Asp Val Val Gln Gly Tyr Asn Gly Ile Asn Lys Gln Ser Ile
 180 185 190

Lys Asn Thr Ile Phe Asn Tyr Gly Ile Leu Lys Arg Met Ile Arg Asp
 195 200 205

Ala Thr Lys Leu Asp Val Gly Phe Ile Arg Thr Val Phe Arg Ser Phe
 210 215 220

Ile Lys Phe Asp Asp Lys Leu Phe Ile Tyr Glu Arg Ser Ser Gln
 225 230 235

<210> 69

<211> 245

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 69

Lys Leu Ala Pro Ala Lys Leu Lys Ile Val Ser Leu Ala Ser Leu Phe
 1 5 10 15

His Ile Ile Val Leu Ser Phe Gln Pro His Lys Glu Trp Arg Phe Ile
 20 25 30

Ile Tyr Ala Val Pro Ser Ile Met Leu Leu Gly Ala Thr Gly Ala Ala
 35 40 45

His Leu Trp Glu Asn Met Lys Val Lys Lys Ile Thr Asn Val Leu Cys
 50 55 60

Leu Ala Ile Leu Pro Leu Ser Ile Met Thr Ser Phe Phe Ile Ser Met
 65 70 75 80

Ala Phe Leu Tyr Ile Ser Arg Met Asn Tyr Pro Gly Glu Ala Leu
 85 90 95

Thr Ser Phe Asn Asp Met Ile Val Glu Lys Asn Ile Thr Asn Ala Thr
 100 105 110
 Val His Ile Ser Ile Pro Pro Cys Met Thr Gly Val Thr Leu Phe Gly
 115 120 125
 Glu Leu Asn Tyr Gly Val Tyr Gly Ile Asn Tyr Asp Lys Thr Glu Asn
 130 135 140
 Thr Thr Leu Leu Gln Glu Met Trp Pro Ser Phe Asp Phe Leu Ile Thr
 145 150 155 160
 His Glu Pro Thr Ala Ser Gln Leu Pro Phe Glu Asn Lys Thr Thr Asn
 165 170 175
 His Trp Glu Leu Val Asn Thr Thr Lys Met Phe Thr Gly Phe Asp Pro
 180 185 190
 Thr Tyr Ile Lys Asn Phe Val Phe Gln Glu Arg Val Asn Val Leu Ser
 195 200 205
 Leu Leu Lys Gln Ile Ile Phe Asp Lys Thr Pro Thr Val Phe Leu Lys
 210 215 220
 Glu Leu Thr Ala Asn Ser Ile Val Lys Ser Asp Val Phe Phe Thr Tyr
 225 230 235 240
 Lys Arg Ile Lys Gln
 245

<210> 70
 <211> 141
 <212> PRT
 <213> *Pichia pastoris*

<220>
 <221> MOD_RES
 <222> (43)..(61)
 <223> Variable amino acid

<400> 70
 Ile Ile Ala Phe Gln Pro His Lys Glu Trp Arg Phe Ile Val Tyr Ile
 1 5 10 15

Val Pro Pro Leu Val Ile Thr Ile Ser Thr Val Leu Ala Gln Leu Pro
 20 25 30

Arg Arg Phe Thr Ile Val Lys Val Ala Val Xaa Xaa Xaa Xaa Xaa
 35 40 45

Xaa Tyr Asn Tyr
 50 55 60

Pro Gly Gly Glu Ala Leu Gln His Leu Asn Glu Lys Leu Leu Leu
 65 70 75 80

Asp Gln Ser Ser Leu Pro Val Asp Ile Lys Val His Met Asp Val Pro
 85 90 95

Ala Cys Met Thr Gly Val Thr Leu Phe Gly Tyr Leu Asp Asn Ser Lys
 100 105 110

Leu Asn Asn Leu Arg Ile Val Tyr Asp Lys Thr Glu Asp Glu Ser Leu
 115 120 125

Asp Thr Ile Trp Asp Ser Phe Asn Tyr Val Ile Ser Glu
 130 135 140

<210> 71

<211> 137

<212> PRT

<213> Schizosaccharomyces pombe

<400> 71

Val Tyr Ser Phe Leu Gly His Lys Glu Trp Arg Phe Ile Ile Tyr Ser
 1 5 10 15

Ile Pro Trp Phe Asn Ala Ala Ser Ala Ile Gly Ala Ser Leu Cys Phe
 20 25 30

Asn Ala Ser Lys Phe Gly Lys Lys Ile Phe Glu Ile Leu Arg Leu Met
 35 40 45

Phe Phe Ser Gly Ile Ile Phe Gly Phe Ile Gly Ser Ser Phe Leu Leu
 50 55 60

Tyr Val Phe Gln Tyr Ala Tyr Pro Gly Gly Leu Ala Leu Thr Arg Leu
 65 70 75 80

Tyr Glu Ile Glu Asn His Pro Gln Val Ser Val His Met Asp Val Tyr
 85 90 95

Pro Cys Met Thr Gly Ile Thr Arg Phe Ser Gln Leu Pro Ser Trp Tyr
 100 105 110

Tyr Asp Lys Thr Glu Asp Pro Lys Met Leu Ser Asn Ser Leu Phe Ile
 115 120 125

Ser Gln Phe Asp Tyr Leu Ile Thr Glu
 130 135

<210> 72

<211> 143

<212> PRT

<213> Pichia pastoris

<220>

<221> MOD_RES

<222> (45)...(63)

<223> Variable amino acid

<400> 72

Leu Ala Ile Ile Ala Phe Gln Pro His Lys Glu Trp Arg Phe Ile Val
 1 5 10 15
 Tyr Ile Val Pro Pro Leu Val Ile Thr Ile Ser Thr Val Leu Ala Gln
 20 25 30
 Leu Pro Arg Arg Phe Thr Ile Val Lys Val Ala Val Xaa Xaa Xaa Xaa
 35 40 45
 Xaa Tyr
 50 55 60
 Asn Tyr Pro Gly Gly Glu Ala Leu Gln His Leu Asn Glu Lys Leu Leu
 65 70 75 80
 Leu Leu Asp Gln Ser Ser Leu Pro Val Asp Ile Lys Val His Met Asp
 85 90 95
 Val Pro Ala Cys Met Thr Gly Val Thr Leu Phe Gly Tyr Leu Asp Asn
 100 105 110
 Ser Lys Leu Asn Asn Leu Arg Ile Val Tyr Asp Lys Thr Glu Asp Glu
 115 120 125
 Ser Leu Asp Thr Ile Trp Asp Ser Phe Asn Tyr Val Ile Ser Glu
 130 135 140

<210> 73
 <211> 137
 <212> PRT
 <213> Homo sapiens

<400> 73
 Met Ala Leu Tyr Ser Leu Leu Pro His Lys Glu Leu Arg Phe Ile Ile
 1 5 10 15
 Tyr Ala Phe Pro Met Leu Asn Ile Thr Ala Ala Arg Gly Cys Ser Tyr
 20 25 30
 Leu Leu Asn Asn Tyr Lys Lys Ser Trp Leu Tyr Lys Ala Gly Ser Leu
 35 40 45
 Leu Val Ile Gly His Leu Val Val Asn Ala Ala Tyr Ser Ala Thr Ala
 50 55 60
 Leu Tyr Val Ser His Phe Asn Tyr Pro Gly Gly Val Ala Met Gln Arg
 65 70 75 80
 Leu His Gln Leu Val Pro Pro Gln Thr Asp Val Leu Leu His Ile Asp
 85 90 95
 Val Ala Ala Ala Gln Thr Gly Val Ser Arg Phe Leu Gln Val Asn Ser
 100 105 110
 Ala Trp Arg Tyr Asp Lys Arg Glu Asp Val Gln Pro Gly Thr Gly Met
 115 120 125

Leu Ala Tyr Thr His Ile Leu Met Glu
130 135

<210> 74
<211> 1635
<212> DNA
<213> *Saccharomyces cerevisiae*

<400> 74
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ccaatgtatg attttttgtt tccgtttagg ccagtggga accaatggct gccagaatat 120
attatcttg tatgtgctgt aatactgagg tgacaaattt gacttggcc atattctggg 180
aaaggcagtc caccgctgtt cggcgattt gaggctcaga gacattggat ggaaattacg 240
caacatttac cgctttctaa gtggtaactgg tatgatttgc aatactgggg attggactat 300
ccaccattaa cagcatttca ttctgtaccc ttgggcctaa ttggatctt tttcaatcca 360
tcttgggttgc cactagaaaa gtcacgtggc ttgtaatccc ccgataatgg cctgaaaaca 420
tatatgcgtt ctactgtcat cattagcgac atattgtttt actttccctgc agtaatatac 480
tttactaagt ggcttggtag atatcgaaac cagtcgccc taggacaatc tattgcggca 540
tcagcgattt ttttccaaacc ttctttaatg ctcatgtacc atgggcactt tcaatataat 600
tcagtcatgc ttggccttac tgcttatgcc ataaataact tattagatga gtattatgt 660
atggcggccg ttgtttttgt cctatccatt ttgtttaaac aaatgcatt gtattatgc 720
ccgattttttt ttgtttatct attaagtgcg tcatgtctgt tccccaaatt taacatagct 780
agattgcgg ttattgcgtt tgcaacactc gcaacttttgc ctataatatt tgccgcatta 840
tatttcttgg gaggaggatt aaagattt caccatgtt ttccacaggat attccctttt 900
gccaggggca tcttgcaga caaggttgc aacttctggt gcttacgaa cgtgtttgtt 960
aaatacaagg aaagattcac tatacaacaa ctccagctat attcattgtat tgccacccgtt 1020
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tacgtgtttaa tgcgtatgttgc gatgtccctt ttctttta gcttcaagt acatgagaaa 1140
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ctatcttgc taagttggat aaacaatgtt gctttttta cgctatggcc tttgttggaaa 1260
aaggacggtc ttcatattaca gtatgcccgtt tctttcttac taagcaattt gctgttggaa 1320
aatttcagtt ttattacacc aaggttcttg cccaaatctt taactcctgg cccttctatc 1380
agcagcatca atagcgacta tagaagaaga agcttactgc catataatgtt ggtttggaaa 1440
agttttatca taggaacgtt tattgtctatg ggcttttattt atttctttaga tcaatttgc 1500
gcacctccat cggaaatatcc agacttggg gtgttggat gactgtgttgc tgggttcatt 1560
tgctttagca tattttggct atggctttat tacaagatat tcacttccgg tagcaaatcc 1620
atgaaggact tggtag 1635

<210> 75
<211> 544
<212> PRT
<213> *Saccharomyces cerevisiae*

<400> 75
Met Ala Ile Gly Lys Arg Leu Leu Val Asn Lys Pro Ala Glu Glu Ser
1 5 10 15

Phe Tyr Ala Ser Pro Met Tyr Asp Phe Leu Tyr Pro Phe Arg Pro Val
20 25 30

Gly Asn Gln Trp Leu Pro Glu Tyr Ile Ile Phe Val Cys Ala Val Ile
 35 40 45

Leu Arg Cys Thr Ile Gly Leu Gly Pro Tyr Ser Gly Lys Gly Ser Pro
50 55 60

Pro Leu Tyr Gly Asp Phe Glu Ala Gln Arg His Trp Met Glu Ile Thr
 65 70 75 80
 Gln His Leu Pro Leu Ser Lys Trp Tyr Trp Tyr Asp Leu Gln Tyr Trp
 85 90 95
 Gly Leu Asp Tyr Pro Pro Leu Thr Ala Phe His Ser Tyr Leu Leu Gly
 100 105 110
 Leu Ile Gly Ser Phe Phe Asn Pro Ser Trp Phe Ala Leu Glu Lys Ser
 115 120 125
 Arg Gly Phe Glu Ser Pro Asp Asn Gly Leu Lys Thr Tyr Met Arg Ser
 130 135 140
 Thr Val Ile Ile Ser Asp Ile Leu Phe Tyr Phe Pro Ala Val Ile Tyr
 145 150 155 160
 Phe Thr Lys Trp Leu Gly Arg Tyr Arg Asn Gln Ser Pro Ile Gly Gln
 165 170 175
 Ser Ile Ala Ala Ser Ala Ile Leu Phe Gln Pro Ser Leu Met Leu Ile
 180 185 190
 Asp His Gly His Phe Gln Tyr Asn Ser Val Met Leu Gly Leu Thr Ala
 195 200 205
 Tyr Ala Ile Asn Asn Leu Leu Asp Glu Tyr Tyr Ala Met Ala Ala Val
 210 215 220
 Cys Phe Val Leu Ser Ile Cys Phe Lys Gln Met Ala Leu Tyr Tyr Ala
 225 230 235 240
 Pro Ile Phe Phe Ala Tyr Leu Leu Ser Arg Ser Leu Leu Phe Pro Lys
 245 250 255
 Phe Asn Ile Ala Arg Leu Thr Val Ile Ala Phe Ala Thr Leu Ala Thr
 260 265 270
 Phe Ala Ile Ile Phe Ala Pro Leu Tyr Phe Leu Gly Gly Leu Lys
 275 280 285
 Asn Ile His Gln Cys Ile His Arg Ile Phe Pro Phe Ala Arg Gly Ile
 290 295 300
 Phe Glu Asp Lys Val Ala Asn Phe Trp Cys Val Thr Asn Val Phe Val
 305 310 315 320
 Lys Tyr Lys Glu Arg Phe Thr Ile Gln Gln Leu Gln Leu Tyr Ser Leu
 325 330 335
 Ile Ala Thr Val Ile Gly Phe Leu Pro Ala Met Ile Met Thr Leu Leu
 340 345 350
 His Pro Lys Lys His Leu Leu Pro Tyr Val Leu Ile Ala Cys Ser Met
 355 360 365

Ser Phe Phe Leu Phe Ser Phe Gln Val His Glu Lys Thr Ile Leu Ile
 370 375 380
 Pro Leu Leu Pro Ile Thr Leu Leu Tyr Ser Ser Thr Asp Trp Asn Val
 385 390 395 400
 Leu Ser Leu Val Ser Trp Ile Asn Asn Val Ala Leu Phe Thr Leu Trp
 405 410 415
 Pro Leu Leu Lys Lys Asp Gly Leu His Leu Gln Tyr Ala Val Ser Phe
 420 425 430
 Leu Leu Ser Asn Trp Leu Ile Gly Asn Phe Ser Phe Ile Thr Pro Arg
 435 440 445
 Phe Leu Pro Lys Ser Leu Thr Pro Gly Pro Ser Ile Ser Ser Ile Asn
 450 455 460
 Ser Asp Tyr Arg Arg Arg Ser Leu Leu Pro Tyr Asn Val Val Trp Lys
 465 470 475 480
 Ser Phe Ile Ile Gly Thr Tyr Ile Ala Met Gly Phe Tyr His Phe Leu
 485 490 495
 Asp Gln Phe Val Ala Pro Pro Ser Lys Tyr Pro Asp Leu Trp Val Leu
 500 505 510
 Leu Asn Cys Ala Val Gly Phe Ile Cys Phe Ser Ile Phe Trp Leu Trp
 515 520 525
 Ser Tyr Tyr Lys Ile Phe Thr Ser Gly Ser Lys Ser Met Lys Asp Leu
 530 535 540

<210> 76
 <211> 1644
 <212> DNA
 <213> Pichia pastoris

<400> 76
 atgccccata aaagaacgcc ctctagcagt ctgctgtatg caagaattcc agggatctct 60
 tttggaaact ctccgggtt tgatttttg tctcctttg gaccgcgtcc taatcaatgg 120
 gtagcacat acatcatcat catcttgca attctcatca gattggcagt tgggctggc 180
 tcctattccg gcttcaacac ccctccaatg tatggggatt ttgaagctca gaggcattgg 240
 atggaaatta ctcagcattt atccatagaa aaatggtaact tctacgactt gcaatattgg 300
 gggcttgact atcctccctt gacagcctt cattcatact tctttggcaa attaggcagc 360
 ttcatcaatc cagcatgggt tgcttttagac gtctccagag ggtttaatc agtggatcta 420
 aaatcgtaca tgagggcgac cgcaattctc agtgagctgt tatgttttat tccagctgtc 480
 atttggatt gtcgttggat gggacttaac tacttcaatc aaaacgccat tgagcaaact 540
 ataatagcgt ctgctattct tttcaatcca tctttaatta tcatacatca tggccacttc 600
 cagtacaact cagttatgct aggtttgct ttattatcca tattaaatct gttgtacat 660
 aattttgcat tagcggttat tttttcggtt ctttcaataa gctttaagca aatggctctc 720
 tattatagcc ccatcatgtt ttttacatg ctgagtgtaa gttgttggcc tttgaaaaac 780
 ttcaacttgt tgagattggc tactatcagt attgcagtag tcttgactt tgcaactcta 840
 ttactgcctt ttgttattgt agatgggatg tcacaaattt gccaaatatt attcagagtt 900
 ttcccggttt caagaggcgtt gtttggaggat aaggtggcca acttttggtg tacaacgaat 960
 atactggtaa agtacaaaca gtttactact gacaaaaccc ttactaggat atcgcttagta 1020
 gcaactttga ttgcaatttag tccgtcttgc ttcatcattt ttactcaccc aaagaaggtt 1080

ttactaccgt gggctttgc tgcttgctct tgggcgttct atctttctc tttccaagtc 1140
 cacgagaaaat cagtttttagt tccatttgatg cctaccactc tattactgggt agaaaaaagac 1200
 ttggacatca tctcaatgggt ctgctggatt tctaataattg ccttcttcag catgtggcct 1260
 ctattaaaaa gagacgggct ggcttggaa tattttgtct tggaaatattt gagtaatgg 1320
 ctgattggaa acctcaattt gattagtaaa tggcttgcct ccagtttctt gattccaggg 1380
 cctactctct ccaaaaaaagt tcctaaaaga gatactaaaaa cagttgtca tactcaactgg 1440
 ttttgggggtt cagtaacattt cgtttcatac ctcggagctt cagttatcca gttcgttagat 1500
 tggctgttacc ttccacctgc caagtatcca gatttggggg ttatttgaa cactacattt 1560
 tcgtttgcctt gtttcggggtt gtttggctt tggattaact acaatctgtt cattttgcgt 1620
 gatttaagtc tttaaagatgc tttag 1644

<210> 77
 <211> 547
 <212> PRT
 <213> Pichia pastoris

<400> 77
 Met Pro His Lys Arg Thr Pro Ser Ser Ser Leu Leu Tyr Ala Arg Ile
 1 5 10 15

Pro Gly Ile Ser Phe Glu Asn Ser Pro Val Phe Asp Phe Leu Ser Pro
 20 25 30

Phe Gly Pro Ala Pro Asn Gln Trp Val Ala Arg Tyr Ile Ile Ile Ile
 35 40 45

Phe Ala Ile Leu Ile Arg Leu Ala Val Gly Leu Gly Ser Tyr Ser Gly
 50 55 60

Phe Asn Thr Pro Pro Met Tyr Gly Asp Phe Glu Ala Gln Arg His Trp
 65 70 75 80

Met Glu Ile Thr Gln His Leu Ser Ile Glu Lys Trp Tyr Phe Tyr Asp
 85 90 95

Leu Gln Tyr Trp Gly Leu Asp Tyr Pro Pro Leu Thr Ala Phe His Ser
 100 105 110

Tyr Phe Phe Gly Lys Leu Gly Ser Phe Ile Asn Pro Ala Trp Phe Ala
 115 120 125

Leu Asp Val Ser Arg Gly Phe Glu Ser Val Asp Leu Lys Ser Tyr Met
 130 135 140

Arg Ala Thr Ala Ile Leu Ser Glu Leu Leu Cys Phe Ile Pro Ala Val
 145 150 155 160

Ile Trp Tyr Cys Arg Trp Met Gly Leu Asn Tyr Phe Asn Gln Asn Ala
 165 170 175

Ile Glu Gln Thr Ile Ile Ala Ser Ala Ile Leu Phe Asn Pro Ser Leu
 180 185 190

Ile Ile Ile Asp His Gly His Phe Gln Tyr Asn Ser Val Met Leu Gly
 195 200 205

Phe Ala Leu Leu Ser Ile Leu Asn Leu Leu Tyr Asp Asn Phe Ala Leu
 210 215 220
 Ala Ala Ile Phe Phe Val Leu Ser Ile Ser Phe Lys Gln Met Ala Leu
 225 230 235 240
 Tyr Tyr Ser Pro Ile Met Phe Phe Tyr Met Leu Ser Val Ser Cys Trp
 245 250 255
 Pro Leu Lys Asn Phe Asn Leu Leu Arg Leu Ala Thr Ile Ser Ile Ala
 260 265 270
 Val Leu Leu Thr Phe Ala Thr Leu Leu Leu Pro Phe Val Leu Val Asp
 275 280 285
 Gly Met Ser Gln Ile Gly Gln Ile Leu Phe Arg Val Phe Pro Phe Ser
 290 295 300
 Arg Gly Leu Phe Glu Asp Lys Val Ala Asn Phe Trp Cys Thr Thr Asn
 305 310 315 320
 Ile Leu Val Lys Tyr Lys Gln Leu Phe Thr Asp Lys Thr Leu Thr Arg
 325 330 335
 Ile Ser Leu Val Ala Thr Leu Ile Ala Ile Ser Pro Ser Cys Phe Ile
 340 345 350
 Ile Phe Thr His Pro Lys Lys Val Leu Leu Pro Trp Ala Phe Ala Ala
 355 360 365
 Cys Ser Trp Ala Phe Tyr Leu Phe Ser Phe Gln Val His Glu Lys Ser
 370 375 380
 Val Leu Val Pro Leu Met Pro Thr Thr Leu Leu Leu Val Glu Lys Asp
 385 390 395 400
 Leu Asp Ile Ile Ser Met Val Cys Trp Ile Ser Asn Ile Ala Phe Phe
 405 410 415
 Ser Met Trp Pro Leu Leu Lys Arg Asp Gly Leu Ala Leu Glu Tyr Phe
 420 425 430
 Val Leu Gly Ile Leu Ser Asn Trp Leu Ile Gly Asn Leu Asn Trp Ile
 435 440 445
 Ser Lys Trp Leu Val Pro Ser Phe Leu Ile Pro Gly Pro Thr Leu Ser
 450 455 460
 Lys Lys Val Pro Lys Arg Asp Thr Lys Thr Val Val His Thr His Trp
 465 470 475 480
 Phe Trp Gly Ser Val Thr Phe Val Ser Tyr Leu Gly Ala Thr Val Ile
 485 490 495
 Gln Phe Val Asp Trp Leu Tyr Leu Pro Pro Ala Lys Tyr Pro Asp Leu
 500 505 510

Trp Val Ile Leu Asn Thr Thr Leu Ser Phe Ala Cys Phe Gly Leu Phe
 515 520 525

Trp Leu Trp Ile Asn Tyr Asn Leu Tyr Ile Leu Arg Asp Phe Lys Leu
 530 535 540

Lys Asp Ala
 545

<210> 78
 <211> 527
 <212> PRT
 <213> Pichia pastoris

<220>
 <221> MOD_RES
 <222> (23)...(37)
 <223> Variable amino acid

<220>
 <221> MOD_RES
 <222> (366)...(378)
 <223> Variable amino acid

<400> 78
 Ser Phe Glu Asn Ser Pro Val Phe Asp Phe Leu Ser Pro Phe Gly Pro
 1 5 10 15

Ala Pro Asn Gln Trp Val Xaa
 20 25 30

Xaa Xaa Xaa Xaa Xaa Val Gly Leu Gly Ser Tyr Ser Gly Phe Asn Thr
 35 40 45

Pro Pro Met Tyr Gly Asp Phe Glu Ala Gln Arg His Trp Met Glu Ile
 50 55 60

Thr Gln His Leu Ser Ile Glu Lys Trp Tyr Phe Tyr Asp Leu Gln Tyr
 65 70 75 80

Trp Gly Leu Asp Tyr Pro Pro Leu Thr Ala Phe His Ser Tyr Phe Phe
 85 90 95

Gly Lys Leu Gly Ser Phe Ile Asn Pro Ala Trp Phe Ala Leu Asp Val
 100 105 110

Ser Arg Gly Phe Glu Ser Val Asp Leu Lys Ser Tyr Met Arg Ala Thr
 115 120 125

Ala Ile Leu Ser Glu Leu Leu Cys Phe Ile Pro Ala Val Ile Trp Tyr
 130 135 140

Cys Arg Trp Met Gly Leu Asn Tyr Phe Asn Gln Asn Ala Ile Glu Gln
 145 150 155 160

Thr Ile Ile Ala Ser Ala Ile Leu Phe Asn Pro Ser Leu Ile Ile Ile
 165 170 175

Asp His Gly His Phe Gln Tyr Asn Ser Val Met Leu Gly Phe Ala Leu
 180 185 190

Leu Ser Ile Leu Asn Leu Leu Tyr Asp Asn Phe Ala Leu Ala Ala Ile
 195 200 205

Phe Phe Val Leu Ser Ile Ser Phe Lys Gln Met Ala Leu Tyr Tyr Ser
 210 215 220

Pro Ile Met Phe Phe Tyr Met Leu Ser Val Ser Cys Trp Pro Leu Lys
 225 230 235 240

Asn Phe Asn Leu Leu Arg Leu Ala Thr Ile Ser Ile Ala Val Leu Leu
 245 250 255

Thr Phe Ala Thr Leu Leu Leu Pro Phe Val Leu Val Asp Gly Met Ser
 260 265 270

Gln Ile Gly Gln Ile Leu Phe Arg Val Phe Pro Phe Ser Arg Gly Leu
 275 280 285

Phe Glu Asp Lys Val Ala Asn Phe Trp Cys Thr Thr Asn Ile Leu Val
 290 295 300

Lys Tyr Lys Gln Leu Phe Thr Asp Lys Thr Leu Thr Arg Ile Ser Leu
 305 310 315 320

Val Ala Thr Leu Ile Ala Ile Ser Pro Ser Cys Phe Ile Ile Phe Thr
 325 330 335

His Pro Lys Lys Val Leu Leu Pro Trp Ala Phe Ala Ala Cys Ser Trp
 340 345 350

Ala Phe Tyr Leu Phe Ser Phe Gln Val His Glu Lys Ser Xaa Xaa Xaa
 355 360 365

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu Lys Asp Leu Asp Ile
 370 375 380

Ile Ser Met Val Cys Trp Ile Ser Asn Ile Ala Phe Phe Ser Met Trp
 385 390 395 400

Pro Leu Leu Lys Arg Asp Gly Leu Ala Leu Glu Tyr Phe Val Leu Gly
 405 410 415

Ile Leu Ser Asn Trp Leu Ile Gly Asn Leu Asn Trp Ile Ser Lys Trp
 420 425 430

Leu Val Pro Ser Phe Leu Ile Pro Gly Pro Thr Leu Ser Lys Lys Val
 435 440 445

Pro Lys Arg Asp Thr Lys Thr Val Val His Thr His Trp Phe Trp Gly
 450 455 460

Ser Val Thr Phe Val Ser Tyr Leu Gly Ala Thr Val Ile Gln Phe Val
 465 470 475 480

61/93

Asp Trp Leu Tyr Leu Pro Pro Ala Lys Tyr Pro Asp Leu Trp Val Ile
485 490 495

Leu Asn Thr Thr Leu Ser Phe Ala Cys Phe Gly Leu Phe Trp Leu Trp
500 505 510

Ile Asn Tyr Asn Leu Tyr Ile Leu Arg Asp Phe Lys Leu Lys Asp
515 520 525

<210> 79

<211> 528

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 79

Ser Phe Tyr Ala Ser Pro Met Tyr Asp Phe Leu Tyr Pro Phe Arg Pro
1 5 10 15

Val Gly Asn Gln Trp Leu Pro Glu Tyr Ile Ile Phe Val Cys Ala Val
20 25 30

Ile Leu Arg Cys Thr Ile Gly Leu Gly Pro Tyr Ser Gly Lys Gly Ser
35 40 45

Pro Pro Leu Tyr Gly Asp Phe Glu Ala Gln Arg His Trp Met Glu Ile
50 55 60

Thr Gln His Leu Pro Leu Ser Lys Trp Tyr Trp Tyr Asp Leu Gln Tyr
65 70 75 80

Trp Gly Leu Asp Tyr Pro Pro Leu Thr Ala Phe His Ser Tyr Leu Leu
85 90 95

Gly Leu Ile Gly Ser Phe Phe Asn Pro Ser Trp Phe Ala Leu Glu Lys
100 105 110

Ser Arg Gly Phe Glu Ser Pro Asp Asn Gly Leu Lys Thr Tyr Met Arg
115 120 125

Ser Thr Val Ile Ile Ser Asp Ile Leu Phe Tyr Phe Pro Ala Val Ile
130 135 140

Tyr Phe Thr Lys Trp Leu Gly Arg Tyr Arg Asn Gln Ser Pro Ile Gly
145 150 155 160

Gln Ser Ile Ala Ala Ser Ala Ile Leu Phe Gln Pro Ser Leu Met Leu
165 170 175

Ile Asp His Gly His Phe Gln Tyr Asn Ser Val Met Leu Gly Leu Thr
180 185 190

Ala Tyr Ala Ile Asn Asn Leu Leu Asp Glu Tyr Tyr Ala Met Ala Ala
195 200 205

Val Cys Phe Val Leu Ser Ile Cys Phe Lys Gln Met Ala Leu Tyr Tyr
210 215 220

Ala Pro Ile Phe Phe Ala Tyr Leu Leu Ser Arg Ser Leu Leu Phe Pro
 225 230 235 240
 Lys Phe Asn Ile Ala Arg Leu Thr Val Ile Ala Phe Ala Thr Leu Ala
 245 250 255
 Thr Phe Ala Ile Ile Phe Ala Pro Leu Tyr Phe Leu Gly Gly Gly Leu
 260 265 270
 Lys Asn Ile His Gln Cys Ile His Arg Ile Phe Pro Phe Ala Arg Gly
 275 280 285
 Ile Phe Glu Asp Lys Val Ala Asn Phe Trp Cys Val Thr Asn Val Phe
 290 295 300
 Val Lys Tyr Lys Glu Arg Phe Thr Ile Gln Gln Leu Gln Leu Tyr Ser
 305 310 315 320
 Leu Ile Ala Thr Val Ile Gly Phe Leu Pro Ala Met Ile Met Thr Leu
 325 330 335
 Leu His Pro Lys Lys His Leu Leu Pro Tyr Val Leu Ile Ala Cys Ser
 340 345 350
 Met Ser Phe Phe Leu Phe Ser Phe Gln Val His Glu Lys Thr Ile Leu
 355 360 365
 Ile Pro Leu Leu Pro Ile Thr Leu Leu Tyr Ser Ser Thr Asp Trp Asn
 370 375 380
 Val Leu Ser Leu Val Ser Trp Ile Asn Asn Val Ala Leu Phe Thr Leu
 385 390 395 400
 Trp Pro Leu Leu Lys Lys Asp Gly Leu His Leu Gln Tyr Ala Val Ser
 405 410 415
 Phe Leu Leu Ser Asn Trp Leu Ile Gly Asn Phe Ser Phe Ile Thr Pro
 420 425 430
 Arg Phe Leu Pro Lys Ser Leu Thr Pro Gly Pro Ser Ile Ser Ser Ile
 435 440 445
 Asn Ser Asp Tyr Arg Arg Arg Ser Leu Leu Pro Tyr Asn Val Val Trp
 450 455 460
 Lys Ser Phe Ile Ile Gly Thr Tyr Ile Ala Met Gly Phe Tyr His Phe
 465 470 475 480
 Leu Asp Gln Phe Val Ala Pro Pro Ser Lys Tyr Pro Asp Leu Trp Val
 485 490 495
 Leu Leu Asn Cys Ala Val Gly Phe Ile Cys Phe Ser Ile Phe Trp Leu
 500 505 510
 Trp Ser Tyr Tyr Lys Ile Phe Thr Ser Gly Ser Lys Ser Met Lys Asp
 515 520 525

<210> 80
 <211> 511
 <212> PRT
 <213> *Pichia pastoris*

<220>
 <221> MOD_RES
 <222> (22)...(36)
 <223> Variable amino acid

<220>
 <221> MOD_RES
 <222> (365)...(379)
 <223> Variable amino acid

<400> 80
 Phe Glu Asn Ser Pro Val Phe Asp Phe Leu Ser Pro Phe Gly Pro Ala
 1 5 10 15

Pro Asn Gln Trp Val Xaa
 20 25 30

Xaa Xaa Xaa Xaa Val Gly Leu Gly Ser Tyr Ser Gly Phe Asn Thr Pro
 35 40 45

Pro Met Tyr Gly Asp Phe Glu Ala Gln Arg His Trp Met Glu Ile Thr
 50 55 60

Gln His Leu Ser Ile Glu Lys Trp Tyr Phe Tyr Asp Leu Gln Tyr Trp
 65 70 75 80

Gly Leu Asp Tyr Pro Pro Leu Thr Ala Phe His Ser Tyr Phe Phe Gly
 85 90 95

Lys Leu Gly Ser Phe Ile Asn Pro Ala Trp Phe Ala Leu Asp Val Ser
 100 105 110

Arg Gly Phe Glu Ser Val Asp Leu Lys Ser Tyr Met Arg Ala Thr Ala
 115 120 125

Ile Leu Ser Glu Leu Leu Cys Phe Ile Pro Ala Val Ile Trp Tyr Cys
 130 135 140

Arg Trp Met Gly Leu Asn Tyr Phe Asn Gln Asn Ala Ile Glu Gln Thr
 145 150 155 160

Ile Ile Ala Ser Ala Ile Leu Phe Asn Pro Ser Leu Ile Ile Ile Asp
 165 170 175

His Gly His Phe Gln Tyr Asn Ser Val Met Leu Gly Phe Ala Leu Leu
 180 185 190

Ser Ile Leu Asn Leu Leu Tyr Asp Asn Phe Ala Leu Ala Ala Ile Phe
 195 200 205

Phe Val Leu Ser Ile Ser Phe Lys Gln Met Ala Leu Tyr Tyr Ser Pro
 210 215 220

Ile Met Phe Phe Tyr Met Leu Ser Val Ser Cys Trp Pro Leu Lys Asn
 225 230 235 240
 Phe Asn Leu Leu Arg Leu Ala Thr Ile Ser Ile Ala Val Leu Leu Thr
 245 250 255
 Phe Ala Thr Leu Leu Leu Pro Phe Val Leu Val Asp Gly Met Ser Gln
 260 265 270
 Ile Gly Gln Ile Leu Phe Arg Val Phe Pro Phe Ser Arg Gly Leu Phe
 275 280 285
 Glu Asp Lys Val Ala Asn Phe Trp Cys Thr Thr Asn Ile Leu Val Lys
 290 295 300
 Tyr Lys Gln Leu Phe Thr Asp Lys Thr Leu Thr Arg Ile Ser Leu Val
 305 310 315 320
 Ala Thr Leu Ile Ala Ile Ser Pro Ser Cys Phe Ile Ile Phe Thr His
 325 330 335
 Pro Lys Lys Val Leu Leu Pro Trp Ala Phe Ala Ala Cys Ser Trp Ala
 340 345 350
 Phe Tyr Leu Phe Ser Phe Gln Val His Glu Lys Ser Xaa Xaa Xaa Xaa
 355 360 365
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu Lys Asp Leu Asp Ile Ile
 370 375 380
 Ser Met Val Cys Trp Ile Ser Asn Ile Ala Phe Phe Ser Met Trp Pro
 385 390 395 400
 Leu Leu Lys Arg Asp Gly Leu Ala Leu Glu Tyr Phe Val Leu Gly Ile
 405 410 415
 Leu Ser Asn Trp Leu Ile Gly Asn Leu Asn Trp Ile Ser Lys Trp Leu
 420 425 430
 Val Pro Ser Phe Leu Ile Pro Gly Pro Thr Leu Ser Lys Lys Val Pro
 435 440 445
 Lys Arg Asp Thr Lys Thr Val Val His Thr His Trp Phe Trp Gly Ser
 450 455 460
 Val Thr Phe Val Ser Tyr Leu Gly Ala Thr Val Ile Gln Phe Val Asp
 465 470 475 480
 Trp Leu Tyr Leu Pro Pro Ala Lys Tyr Pro Asp Leu Trp Val Ile Leu
 485 490 495
 Asn Thr Thr Leu Ser Phe Ala Cys Phe Gly Leu Phe Trp Leu Trp
 500 505 510

<210> 81
 <211> 480

<212> PRT

<213> Schizosaccharomyces pombe

<400> 81

Phe	Glu	Asn	Gly	Ala	Pro	Val	Gln	Gln	Phe	Val	Ser	Arg	Phe	Arg	Ser
1							5			10			15		

Tyr	Ser	Ser	Lys	Phe	Leu	Phe	Phe	Pro	Cys	Leu	Ile	Met	Ser	Leu	Val
					20				25				30		

Phe	Met	Gln	Trp	Leu	Ile	Ser	Ile	Gly	Pro	Tyr	Ser	Gly	Tyr	Asn	Thr
					35			40				45			

Pro	Pro	Met	Tyr	Gly	Asp	Phe	Glu	Ala	Gln	Arg	His	Trp	Met	Glu	Leu
					50			55			60				

Thr	Leu	His	Thr	Pro	Val	Ser	Gln	Trp	Tyr	Phe	Arg	Asp	Leu	Gln	Trp
					65			70		75		80			

Trp	Gly	Leu	Asp	Tyr	Pro	Pro	Leu	Thr	Ala	Tyr	Val	Ser	Trp	Phe	Phe
					85				90			95			

Gly	Ile	Ile	Gly	His	Tyr	Phe	Phe	Asn	Pro	Glu	Trp	Phe	Ala	Asp	Val
					100			105			110				

Thr	Ser	Arg	Gly	Phe	Glu	Ser	Leu	Glu	Leu	Lys	Leu	Phe	Met	Arg	Ser
					115			120			125				

Thr	Val	Ile	Ala	Ser	His	Leu	Leu	Ile	Leu	Val	Pro	Pro	Leu	Met	Phe
					130			135			140				

Tyr	Ser	Lys	Trp	Trp	Ser	Arg	Arg	Ile	Pro	Asn	Phe	Val	Asp	Arg	Asn
					145			150		155		160			

Ala	Ser	Leu	Ile	Met	Val	Leu	Phe	Gln	Pro	Ala	Leu	Leu	Ile	Asp
					165				170			175		

His	Gly	His	Phe	Gln	Tyr	Asn	Cys	Val	Met	Leu	Gly	Leu	Val	Met	Tyr
					180			185			190				

Ala	Ile	Ala	Asn	Leu	Leu	Lys	Asn	Gln	Tyr	Val	Ala	Ala	Thr	Phe	Phe
					195				200			205			

Phe	Cys	Leu	Ala	Leu	Thr	Phe	Lys	Gln	Met	Ala	Leu	Tyr	Phe	Ala	Pro
					210			215			220				

Pro	Ile	Phe	Phe	Tyr	Leu	Leu	Gly	Thr	Cys	Val	Lys	Pro	Lys	Ile	Arg
					225			230		235		240			

Phe	Ser	Arg	Phe	Ile	Leu	Leu	Ser	Val	Thr	Val	Val	Phe	Thr	Phe	Ser
					245			250			255				

Leu	Ile	Leu	Phe	Pro	Trp	Ile	Tyr	Met	Asp	Tyr	Lys	Thr	Leu	Leu	Pro
					260			265			270				

Gln	Ile	Leu	His	Arg	Val	Phe	Pro	Phe	Ala	Arg	Gly	Leu	Trp	Glu	Asp
					275			280			285				

Lys Val Ala Asn Phe Trp Cys Thr Leu Asn Thr Val Phe Lys Ile Arg
 290 295 300
 Glu Val Phe Thr Leu His Gln Leu Gln Val Ile Ser Leu Ile Phe Thr
 305 310 315 320
 Leu Ile Ser Ile Leu Pro Ser Cys Val Ile Leu Phe Leu Tyr Pro Arg
 325 330 335
 Lys Arg Leu Leu Ala Leu Gly Phe Ala Ser Ala Ser Trp Gly Phe Phe
 340 345 350
 Leu Phe Ser Phe Gln Val His Glu Lys Ser Val Leu Leu Pro Leu Leu
 355 360 365
 Pro Thr Ser Ile Leu Leu Cys His Gly Asn Ile Thr Thr Lys Pro Trp
 370 375 380
 Ile Ala Leu Ala Asn Asn Leu Ala Val Phe Ser Leu Trp Pro Leu Leu
 385 390 395 400
 Lys Lys Asp Gly Leu Gly Leu Gln Tyr Phe Thr Leu Val Leu Met Trp
 405 410 415
 Asn Trp Ile Gly Asp Met Val Val Phe Ser Lys Asn Val Leu Phe Arg
 420 425 430
 Phe Ile Gln Leu Ser Phe Tyr Val Gly Met Ile Val Ile Leu Gly Ile
 435 440 445
 Asp Leu Phe Ile Pro Pro Ser Arg Tyr Pro Asp Leu Trp Val Ile
 450 455 460
 Leu Asn Val Thr Leu Ser Phe Ala Gly Phe Phe Thr Ile Tyr Leu Trp
 465 470 475 480

<210> 82
 <211> 477
 <212> PRT
 <213> Pichia pastoris

<220>
 <221> MOD_RES
 <222> (329)..(341)
 <223> Variable amino acid

<400> 82
 Val Gly Leu Gly Ser Tyr Ser Gly Phe Asn Thr Pro Pro Met Tyr Gly
 1 5 10 15

Asp Phe Glu Ala Gln Arg His Trp Met Glu Ile Thr Gln His Leu Ser
 20 25 30

Ile Glu Lys Trp Tyr Phe Tyr Asp Leu Gln Tyr Trp Gly Leu Asp Tyr
 35 40 45

Pro Pro Leu Thr Ala Phe His Ser Tyr Phe Phe Gly Lys Leu Gly Ser
 50 55 60

Phe Ile Asn Pro Ala Trp Phe Ala Leu Asp Val Ser Arg Gly Phe Glu
 65 70 75 80

Ser Val Asp Leu Lys Ser Tyr Met Arg Ala Thr Ala Ile Leu Ser Glu
 85 90 95

Leu Leu Cys Phe Ile Pro Ala Val Ile Trp Tyr Cys Arg Trp Met Gly
 100 105 110

Leu Asn Tyr Phe Asn Gln Asn Ala Ile Glu Gln Thr Ile Ile Ala Ser
 115 120 125

Ala Ile Leu Phe Asn Pro Ser Leu Ile Ile Ile Asp His Gly His Phe
 130 135 140

Gln Tyr Asn Ser Val Met Leu Gly Phe Ala Leu Leu Ser Ile Leu Asn
 145 150 155 160

Leu Leu Tyr Asp Asn Phe Ala Leu Ala Ala Ile Phe Phe Val Leu Ser
 165 170 175

Ile Ser Phe Lys Gln Met Ala Leu Tyr Tyr Ser Pro Ile Met Phe Phe
 180 185 190

Tyr Met Leu Ser Val Ser Cys Trp Pro Leu Lys Asn Phe Asn Leu Leu
 195 200 205

Arg Leu Ala Thr Ile Ser Ile Ala Val Leu Leu Thr Phe Ala Thr Leu
 210 215 220

Leu Leu Pro Phe Val Leu Val Asp Gly Met Ser Gln Ile Gly Gln Ile
 225 230 235 240

Leu Phe Arg Val Phe Pro Phe Ser Arg Gly Leu Phe Glu Asp Lys Val
 245 250 255

Ala Asn Phe Trp Cys Thr Thr Asn Ile Leu Val Lys Tyr Lys Gln Leu
 260 265 270

Phe Thr Asp Lys Thr Leu Thr Arg Ile Ser Leu Val Ala Thr Leu Ile
 275 280 285

Ala Ile Ser Pro Ser Cys Phe Ile Ile Phe Thr His Pro Lys Lys Val
 290 295 300

Leu Leu Pro Trp Ala Phe Ala Ala Cys Ser Trp Ala Phe Tyr Leu Phe
 305 310 315 320

Ser Phe Gln Val His Glu Lys Ser Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 325 330 335

Xaa Xaa Xaa Xaa Xaa Glu Lys Asp Leu Asp Ile Ile Ser Met Val Cys
 340 345 350

Trp Ile Ser Asn Ile Ala Phe Phe Ser Met Trp Pro Leu Leu Lys Arg
 355 360 365

Asp Gly Leu Ala Leu Glu Tyr Phe Val Leu Gly Ile Leu Ser Asn Trp
 370 375 380

Leu Ile Gly Asn Leu Asn Trp Ile Ser Lys Trp Leu Val Pro Ser Phe
 385 390 395 400

Leu Ile Pro Gly Pro Thr Leu Ser Lys Lys Val Pro Lys Arg Asp Thr
 405 410 415

Lys Thr Val Val His Thr His Trp Phe Trp Gly Ser Val Thr Phe Val
 420 425 430

Ser Tyr Leu Gly Ala Thr Val Ile Gln Phe Val Asp Trp Leu Tyr Leu
 435 440 445

Pro Pro Ala Lys Tyr Pro Asp Leu Trp Val Ile Leu Asn Thr Thr Leu
 450 455 460

Ser Phe Ala Cys Phe Gly Leu Phe Trp Leu Trp Ile Asn
 465 470 475

<210> 83

<211> 448

<212> PRT

<213> Drosophila melanogaster

<400> 83

Ile Ser Leu Tyr Ser Tyr Ser Gly Phe Asp Ser Pro Pro Met His Gly
 1 5 10 15

Asp Tyr Glu Ala Gln Arg His Trp Gln Glu Ile Thr Val Asn Leu Ala
 20 25 30

Val Gly Glu Trp Tyr Thr Asn Ser Ser Asn Asn Asp Leu Gln Tyr Trp
 35 40 45

Gly Leu Asp Tyr Pro Pro Leu Thr Ala Tyr His Ser Tyr Leu Val Gly
 50 55 60

Arg Ile Gly Ala Ser Ile Asp Pro Arg Phe Val Glu Leu His Lys Ser
 65 70 75 80

Arg Gly Phe Glu Ser Lys Glu His Lys Arg Phe Met Arg Ala Thr Val
 85 90 95

Val Ser Ala Asp Val Leu Ile Tyr Leu Pro Ala Met Leu Leu Ala
 100 105 110

Tyr Ser Leu Asp Lys Ala Phe Arg Ser Asp Asp Lys Leu Phe Leu Phe
 115 120 125

Thr Leu Val Ala Ala Tyr Pro Gly Gln Thr Leu Ile Asp Asn Gly His
 130 135 140

Phe Gln Tyr Asn Asn Ile Ser Leu Gly Phe Ala Ala Val Ala Ile Ala
 145 150 155 160
 Ala Ile Leu Arg Arg Arg Phe Tyr Ala Ala Ala Phe Phe Phe Thr Leu
 165 170 175
 Ala Leu Asn Tyr Lys Gln Met Glu Leu Tyr His Ser Leu Pro Phe Phe
 180 185 190
 Ala Phe Leu Leu Gly Glu Cys Val Ser Gln Lys Ser Phe Ala Ser Phe
 195 200 205
 Ile Ala Glu Ile Ser Arg Ile Ala Ala Val Val Leu Gly Thr Phe Ala
 210 215 220
 Ile Leu Trp Val Pro Trp Leu Gly Ser Leu Gln Ala Val Leu Gln Val
 225 230 235 240
 Leu His Arg Leu Phe Pro Val Ala Arg Gly Val Phe Glu Asp Lys Val
 245 250 255
 Ala Asn Val Trp Cys Ala Val Asn Val Val Trp Lys Leu Lys Lys His
 260 265 270
 Ile Ser Asn Asp Gln Met Ala Leu Val Cys Ile Ala Cys Thr Leu Ile
 275 280 285
 Ala Ser Leu Pro Thr Asn Val Leu Leu Phe Arg Arg Arg Thr Asn Val
 290 295 300
 Gly Phe Leu Leu Ala Leu Phe Asn Thr Ser Leu Ala Phe Phe Leu Phe
 305 310 315 320
 Ser Phe Gln Val His Glu Lys Thr Ile Leu Leu Thr Ala Leu Pro Ala
 325 330 335
 Leu Phe Leu Leu Lys Cys Trp Pro Asp Glu Met Ile Leu Phe Leu Glu
 340 345 350
 Val Thr Val Phe Ser Met Leu Pro Leu Leu Ala Arg Asp Glu Leu Leu
 355 360 365
 Val Pro Ala Val Val Ala Thr Val Ala Phe His Leu Ile Phe Lys Cys
 370 375 380
 Phe Asp Ser Lys Ser Lys Leu Ser Asn Glu Tyr Pro Leu Lys Tyr Ile
 385 390 395 400
 Ala Asn Ile Ser Gln Ile Leu Met Ile Ser Val Val Val Ala Ser Leu
 405 410 415
 Thr Val Pro Ala Pro Thr Lys Tyr Pro Asp Leu Trp Pro Leu Ile Ile
 420 425 430
 Ser Val Thr Ser Cys Gly His Phe Phe Leu Phe Phe Leu Trp Gly Asn
 435 440 445

<210> 84
 <211> 478
 <212> PRT
 <213> Pichia pastoris

<220>
 <221> MOD_RES
 <222> (324)..(336)
 <223> Variable amino acid

<400> 84
 Tyr Ser Gly Phe Asn Thr Pro Pro Met Tyr Gly Asp Phe Glu Ala Gln
 1 5 10 15
 Arg His Trp Met Glu Ile Thr Gln His Leu Ser Ile Glu Lys Trp Tyr
 20 25 30
 Phe Tyr Asp Leu Gln Tyr Trp Gly Leu Asp Tyr Pro Pro Leu Thr Ala
 35 40 45
 Phe His Ser Tyr Phe Phe Gly Lys Leu Gly Ser Phe Ile Asn Pro Ala
 50 55 60
 Trp Phe Ala Leu Asp Val Ser Arg Gly Phe Glu Ser Val Asp Leu Lys
 65 70 75 80
 Ser Tyr Met Arg Ala Thr Ala Ile Leu Ser Glu Leu Leu Cys Phe Ile
 85 90 95
 Pro Ala Val Ile Trp Tyr Cys Arg Trp Met Gly Leu Asn Tyr Phe Asn
 100 105 110
 Gln Asn Ala Ile Glu Gln Thr Ile Ile Ala Ser Ala Ile Leu Phe Asn
 115 120 125
 Pro Ser Leu Ile Ile Ile Asp His Gly His Phe Gln Tyr Asn Ser Val
 130 135 140
 Met Leu Gly Phe Ala Leu Leu Ser Ile Leu Asn Leu Leu Tyr Asp Asn
 145 150 155 160
 Phe Ala Leu Ala Ala Ile Phe Phe Val Leu Ser Ile Ser Phe Lys Gln
 165 170 175
 Met Ala Leu Tyr Tyr Ser Pro Ile Met Phe Phe Tyr Met Leu Ser Val
 180 185 190
 Ser Cys Trp Pro Leu Lys Asn Phe Asn Leu Leu Arg Leu Ala Thr Ile
 195 200 205
 Ser Ile Ala Val Leu Leu Thr Phe Ala Thr Leu Leu Leu Pro Phe Val
 210 215 220
 Leu Val Asp Gly Met Ser Gln Ile Gly Gln Ile Leu Phe Arg Val Phe
 225 230 235 240
 Pro Phe Ser Arg Gly Leu Phe Glu Asp Lys Val Ala Asn Phe Trp Cys
 245 250 255

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Thr Thr Asn Ile Leu Val Lys Tyr Lys Gln Leu Phe Thr Asp Lys Thr
260 265 270

Leu Thr Arg Ile Ser Leu Val Ala Thr Leu Ile Ala Ile Ser Pro Ser
275 280 285

Cys Phe Ile Ile Phe Thr His Pro Lys Lys Val Leu Leu Pro Trp Ala
290 295 300

Phe Ala Ala Cys Ser Trp Ala Phe Tyr Leu Phe Ser Phe Gln Val His
305 310 315 320

Glu Lys Ser Xaa
325 330 335

Glu Lys Asp Leu Asp Ile Ile Ser Met Val Cys Trp Ile Ser Asn Ile
340 345 350

Ala Phe Phe Ser Met Trp Pro Leu Leu Lys Arg Asp Gly Leu Ala Leu
355 360 365

Glu Tyr Phe Val Leu Gly Ile Leu Ser Asn Trp Leu Ile Gly Asn Leu
370 375 380

Asn Trp Ile Ser Lys Trp Leu Val Pro Ser Phe Leu Ile Pro Gly Pro
385 390 395 400

Thr Leu Ser Lys Lys Val Pro Lys Arg Asp Thr Lys Thr Val Val His
405 410 415

Thr His Trp Phe Trp Gly Ser Val Thr Phe Val Ser Tyr Leu Gly Ala
420 425 430

Thr Val Ile Gln Phe Val Asp Trp Leu Tyr Leu Pro Pro Ala Lys Tyr
435 440 445

Pro Asp Leu Trp Val Ile Leu Asn Thr Thr Leu Ser Phe Ala Cys Phe
450 455 460

Gly Leu Phe Trp Leu Trp Ile Asn Tyr Asn Leu Tyr Ile Leu
465 470 475

<210> 85
<211> 459
<212> PRT
<213> Arabidopsis thaliana

<400> 85
Tyr Ser Gly Ala Gly Ile Pro Pro Lys Phe Gly Asp Phe Glu Ala Gln
1 5 10 15

Arg His Trp Met Glu Ile Thr Thr Asn Leu Pro Val Ile Asp Trp Tyr
20 25 30

Arg Asn Gly Thr Tyr Asn Asp Leu Thr Tyr Trp Gly Leu Asp Tyr Pro
35 40 45

Pro Leu Thr Ala Tyr Gln Ser Tyr Ile His Gly Ile Phe Leu Arg Phe
 50 55 60
 Phe Asn Pro Glu Ser Val Ala Leu Leu Ser Ser Arg Gly His Glu Ser
 65 70 75 80
 Tyr Leu Gly Lys Leu Leu Met Arg Trp Thr Val Leu Ser Ser Asp Ala
 85 90 95
 Phe Ile Phe Phe Pro Ala Ala Leu Phe Phe Val Leu Val Tyr His Arg
 100 105 110
 Asn Arg Thr Arg Gly Gly Lys Ser Glu Val Ala Trp His Ile Ala Met
 115 120 125
 Ile Leu Leu Asn Pro Cys Leu Ile Leu Ile Asp His Gly His Phe Gln
 130 135 140
 Tyr Asn Cys Ile Ser Leu Gly Leu Thr Val Gly Ala Ile Ala Ala Val
 145 150 155 160
 Leu Cys Glu Ser Glu Val Leu Thr Cys Val Leu Phe Ser Leu Ala Leu
 165 170 175
 Ser His Lys Gln Met Ser Ala Tyr Phe Ala Pro Ala Phe Phe Ser His
 180 185 190
 Leu Leu Gly Lys Cys Leu Arg Arg Lys Ser Pro Ile Leu Ser Val Ile
 195 200 205
 Lys Leu Gly Ile Ala Val Ile Val Thr Phe Val Ile Phe Trp Trp Pro
 210 215 220
 Tyr Val His Ser Leu Asp Asp Phe Leu Met Val Leu Ser Arg Leu Ala
 225 230 235 240
 Pro Phe Glu Arg Gly Ile Tyr Glu Asp Tyr Val Ala Asn Phe Trp Cys
 245 250 255
 Thr Thr Ser Ile Leu Ile Lys Trp Lys Asn Leu Phe Thr Thr Gln Ser
 260 265 270
 Leu Lys Ser Ile Ser Leu Ala Ala Thr Ile Leu Ala Ser Leu Pro Ser
 275 280 285
 Met Val Gln Gln Ile Leu Ser Pro Ser Asn Glu Gly Phe Leu Tyr Gly
 290 295 300
 Leu Leu Asn Ser Ser Met Ala Phe Tyr Leu Phe Ser Phe Gln Val His
 305 310 315 320
 Glu Lys Ser Ile Leu Met Pro Phe Leu Ser Ala Thr Leu Leu Ala Leu
 325 330 335
 Lys Leu Pro Asp His Phe Ser His Leu Thr Tyr Tyr Ala Leu Phe Ser
 340 345 350

Met Phe Pro Leu Leu Cys Arg Asp Lys Leu Leu Ile Pro Tyr Leu Thr
355 360 365

Leu Ser Phe Leu Phe Thr Val Ile Tyr His Ser Pro Gly Asn His His
370 375 380

Ala Ile Gln Lys Thr Asp Val Ser Phe Phe Ser Phe Lys Asn Phe Pro
385 390 395 400

Gly Tyr Val Phe Leu Leu Arg Thr His Phe Phe Ile Ser Val Val Leu
405 410 415

His Val Leu Tyr Leu Thr Ile Lys Pro Pro Gln Lys Tyr Pro Phe Leu
420 425 430

Phe Glu Ala Leu Ile Met Ile Leu Cys Phe Ser Tyr Phe Ile Met Phe
435 440 445

Ala Phe Tyr Thr Asn Tyr Thr Gln Trp Thr Leu
450 455

<210> 86

<211> 836

<212> DNA

<213> Kluyveromyces lactis

<400> 86

atctctgttt caacagctct tgcattcatt ggttctttcg gtccaatcta tatctttgga 60
ggatacaaga acttagtgca atcaatgcac aggatttttc cattgccag gggtatcttt 120
gaagataaaag ttgcgaattt ttgggtgcgtt tctaataattt tcataaataa tagaaatcta 180
ttcactcaga aggatcttca attatactca ttactcgaa cagttattgg gcttttacca 240
tcattcatta taacatttt atacccgaag agacattttac taccatatgc tttggccgca 300
tggtcgatgt cattcttctt attcagcttc caggttcatg aaaagacaat cttaaacct 360
ttacttccta ttacactctt gtacacgtca agagattgga atgttctatc attgggttgt 420
tggattaaaca acgtggcatt gtttacactc tggccattac tgaaaaagga caatctagta 480
ttgcaatatg gagtcatgtt catgtttagc aattgggttga tcggtaactt cagtttgc 540
acaccacgct tcctccaaa attttgaca ccagggccat ccatcagtga tatagatgtt 600
gattatagac gggcaagttt actacccaag agcctaataat ggagattaat cattgtggc 660
tcatatattg caatggggat tattcattt cttagactatt acgtctcccc gccatcaaaa 720
taccctgatt tatgggtgct tgccaaattgt tcctgggct tctcatgttt tgtgacattt 780
tggatatgga acaattataa ttattcgaaa tgagaaacag cactttgcaa gattta 836

<210> 87

<211> 277

<212> PRT

<213> Kluyveromyces lactis

<400> 87

Ile Ser Val Ser Thr Ala Leu Ala Phe Ile Gly Ser Phe Gly Pro Ile
1 5 10 15

Tyr Ile Phe Gly Gly Tyr Lys Asn Leu Val Gln Ser Met His Arg Ile
20 25 30

Phe Pro Phe Ala Arg Gly Ile Phe Glu Asp Lys Val Ala Asn Phe Trp
35 40 45

Cys Val Ser Asn Ile Phe Ile Lys Tyr Arg Asn Leu Phe Thr Gln Lys
 50 55 60

Asp Leu Gln Leu Tyr Ser Leu Leu Ala Thr Val Ile Gly Leu Leu Pro
 65 70 75 80

Ser Phe Ile Ile Thr Phe Leu Tyr Pro Lys Arg His Leu Leu Pro Tyr
 85 90 95

Ala Leu Ala Ala Cys Ser Met Ser Phe Phe Leu Phe Ser Phe Gln Val
 100 105 110

His Glu Lys Thr Ile Leu Leu Pro Leu Leu Pro Ile Thr Leu Leu Tyr
 115 120 125

Thr Ser Arg Asp Trp Asn Val Leu Ser Leu Val Cys Trp Ile Asn Asn
 130 135 140

Val Ala Leu Phe Thr Leu Trp Pro Leu Leu Lys Lys Asp Asn Leu Val
 145 150 155 160

Leu Gln Tyr Gly Val Met Phe Met Phe Ser Asn Trp Leu Ile Gly Asn
 165 170 175

Phe Ser Phe Val Thr Pro Arg Phe Leu Pro Lys Phe Leu Thr Pro Gly
 180 185 190

Pro Ser Ile Ser Asp Ile Asp Val Asp Tyr Arg Arg Ala Ser Leu Leu
 195 200 205

Pro Lys Ser Leu Ile Trp Arg Leu Ile Ile Val Gly Ser Tyr Ile Ala
 210 215 220

Met Gly Ile Ile His Phe Leu Asp Tyr Tyr Val Ser Pro Pro Ser Lys
 225 230 235 240

Tyr Pro Asp Leu Trp Val Leu Ala Asn Cys Ser Leu Gly Phe Ser Cys
 245 250 255

Phe Val Thr Phe Trp Ile Trp Asn Asn Tyr Asn Tyr Ser Lys Glu Thr
 260 265 270

Ala Leu Cys Lys Ile
 275

<210> 88
 <211> 284
 <212> PRT
 <213> Kluyveromyces lactis

<220>
 <221> MOD_RES
 <222> (116)..(127)
 <223> Variable amino acid

<220>

<221> MOD_RES

<222> (271)

<223> Variable amino acid

<400> 88

Ile	Ser	Val	Ser	Thr	Ala	Leu	Ala	Phe	Ile	Gly	Ser	Phe	Gly	Pro	Ile
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Tyr	Ile	Phe	Gly	Gly	Tyr	Lys	Asn	Leu	Val	Gln	Ser	Met	His	Arg	Ile
									25					30	
20															

Phe	Pro	Phe	Ala	Arg	Gly	Ile	Phe	Glu	Asp	Lys	Val	Ala	Asn	Phe	Trp
35								40						45	

Cys	Val	Ser	Asn	Ile	Phe	Ile	Lys	Tyr	Arg	Asn	Leu	Phe	Thr	Gln	Lys
50							55				60				

Asp	Leu	Gln	Leu	Tyr	Ser	Leu	Leu	Ala	Thr	Val	Ile	Gly	Leu	Leu	Pro
										75				80	
65							70								

Ser	Phe	Ile	Ile	Thr	Phe	Leu	Tyr	Pro	Lys	Arg	His	Leu	Leu	Pro	Tyr
85								90						95	

Ala	Leu	Ala	Ala	Cys	Ser	Met	Ser	Phe	Phe	Leu	Phe	Ser	Phe	Gln	Val
100								105						110	

His	Glu	Lys	Xaa	Tyr											
115								120						125	

Thr	Ser	Arg	Asp	Trp	Asn	Val	Leu	Ser	Leu	Val	Cys	Trp	Ile	Asn	Asn
130							135					140			

Val	Ala	Leu	Phe	Thr	Leu	Trp	Pro	Leu	Leu	Lys	Lys	Asp	Asn	Leu	Val
145							150			155			160		

Leu	Gln	Tyr	Gly	Val	Met	Phe	Met	Phe	Ser	Asn	Trp	Leu	Ile	Gly	Asn
165								170					175		

Phe	Ser	Phe	Val	Thr	Pro	Arg	Phe	Leu	Pro	Lys	Phe	Leu	Thr	Pro	Gly
180								185					190		

Pro	Ser	Ile	Ser	Asp	Ile	Asp	Val	Asp	Tyr	Arg	Arg	Ala	Ser	Leu	Leu
195								200					205		

Pro	Lys	Ser	Leu	Ile	Trp	Arg	Leu	Ile	Ile	Val	Gly	Ser	Tyr	Ile	Ala
210								215					220		

Met	Gly	Ile	Ile	His	Phe	Leu	Asp	Tyr	Tyr	Val	Ser	Pro	Pro	Ser	Gln
225							230			235			240		

Glu	Arg	Tyr	Lys	Tyr	Pro	Asp	Leu	Trp	Val	Leu	Ala	Asn	Cys	Ser	Leu
245								250					255		

Gly	Phe	Ser	Cys	Phe	Val	Thr	Phe	Trp	Ile	Trp	Asn	Asn	Tyr	Xaa	Leu
260								265					270		

Phe Glu Arg Met Arg Asn Ser Thr Leu Gln Asp Leu
275 280

<210> 89

<211> 280

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 89

Ile Ala Phe Ala Thr Leu Ala Thr Phe Ala Ile Ile Phe Ala Pro Leu
1 5 10 15

Tyr Phe Leu Gly Gly Leu Lys Asn Ile His Gln Cys Ile His Arg
20 25 30

Ile Phe Pro Phe Ala Arg Gly Ile Phe Glu Asp Lys Val Ala Asn Phe
35 40 45

Trp Cys Val Thr Asn Val Phe Val Lys Tyr Lys Glu Arg Phe Thr Ile
50 55 60

Gln Gln Leu Gln Leu Tyr Ser Leu Ile Ala Thr Val Ile Gly Phe Leu
65 70 75 80

Pro Ala Met Ile Met Thr Leu Leu His Pro Lys Lys His Leu Leu Pro
85 90 95

Tyr Val Leu Ile Ala Cys Ser Met Ser Phe Phe Leu Phe Ser Phe Gln
100 105 110

Val His Glu Lys Thr Ile Leu Ile Pro Leu Leu Pro Ile Thr Leu Leu
115 120 125

Tyr Ser Ser Thr Asp Trp Asn Val Leu Ser Leu Val Ser Trp Ile Asn
130 135 140

Asn Val Ala Leu Phe Thr Leu Trp Pro Leu Leu Lys Lys Asp Gly Leu
145 150 155 160

His Leu Gln Tyr Ala Val Ser Phe Leu Leu Ser Asn Trp Leu Ile Gly
165 170 175

Asn Phe Ser Phe Ile Thr Pro Arg Phe Leu Pro Lys Ser Leu Thr Pro
180 185 190

Gly Pro Ser Ile Ser Ser Ile Asn Ser Asp Tyr Arg Arg Arg Ser Leu
195 200 205

Leu Pro Tyr Asn Val Val Trp Lys Ser Phe Ile Ile Gly Thr Tyr Ile
210 215 220

Ala Met Gly Phe Tyr His Phe Leu Asp Gln Phe Val Ala Pro Pro Ser
225 230 235 240

Lys Tyr Pro Asp Leu Trp Val Leu Leu Asn Cys Ala Val Gly Phe Ile
245 250 255

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Cys Phe Ser Ile Phe Trp Leu Trp Ser Tyr Tyr Lys Ile Phe Thr Ser
260 265 270

Gly Ser Lys Ser Met Lys Asp Leu
275 280

<210> 90
<211> 284
<212> PRT
<213> Kluyveromyces lactis

<220>
<221> MOD_RES
<222> (116)..(127)
<223> Variable amino acid

<220>
<221> MOD_RES
<222> (271)
<223> Variable amino acid

<400> 90
Ile Ser Val Ser Thr Ala Leu Ala Phe Ile Gly Ser Phe Gly Pro Ile
1 5 10 15

Tyr Ile Phe Gly Gly Tyr Lys Asn Leu Val Gln Ser Met His Arg Ile
20 25 30

Phe Pro Phe Ala Arg Gly Ile Phe Glu Asp Lys Val Ala Asn Phe Trp
35 40 45

Cys Val Ser Asn Ile Phe Ile Lys Tyr Arg Asn Leu Phe Thr Gln Lys
50 55 60

Asp Leu Gln Leu Tyr Ser Leu Leu Ala Thr Val Ile Gly Leu Leu Pro
65 70 75 80

Ser Phe Ile Ile Thr Phe Leu Tyr Pro Lys Arg His Leu Leu Pro Tyr
85 90 95

Ala Leu Ala Ala Cys Ser Met Ser Phe Phe Leu Phe Ser Phe Gln Val
100 105 110

His Glu Lys Xaa Tyr
115 120 125

Thr Ser Arg Asp Trp Asn Val Leu Ser Leu Val Cys Trp Ile Asn Asn
130 135 140

Val Ala Leu Phe Thr Leu Trp Pro Leu Leu Lys Lys Asp Asn Leu Val
145 150 155 160

Leu Gln Tyr Gly Val Met Phe Met Phe Ser Asn Trp Leu Ile Gly Asn
165 170 175

Phe Ser Phe Val Thr Pro Arg Phe Leu Pro Lys Phe Leu Thr Pro Gly
180 185 190

Pro Ser Ile Ser Asp Ile Asp Val Asp Tyr Arg Arg Ala Ser Leu Leu
195 200 205

Pro Lys Ser Leu Ile Trp Arg Leu Ile Ile Val Gly Ser Tyr Ile Ala
210 215 220

Met Gly Ile Ile His Phe Leu Asp Tyr Tyr Val Ser Pro Pro Ser Gln
225 230 235 240

Glu Arg Tyr Lys Tyr Pro Asp Leu Trp Val Leu Ala Asn Cys Ser Leu
245 250 255

Gly Phe Ser Cys Phe Val Thr Phe Trp Ile Trp Asn Asn Tyr Xaa Leu
260 265 270

Phe Glu Arg Met Arg Asn Ser Thr Leu Gln Asp Leu
275 280

<210> 91

<211> 250

<212> PRT

<213> Schizosaccharomyces pombe

<400> 91

Leu Ser Val Thr Val Val Phe Thr Phe Ser Leu Ile Leu Phe Pro Trp
1 5 10 15

Ile Tyr Met Asp Tyr Lys Thr Leu Leu Pro Gln Ile Leu His Arg Val
20 25 30

Phe Pro Phe Ala Arg Gly Leu Trp Glu Asp Lys Val Ala Asn Phe Trp
35 40 45

Cys Thr Leu Asn Thr Val Phe Lys Ile Arg Glu Val Phe Thr Leu His
50 55 60

Gln Leu Gln Val Ile Ser Leu Ile Phe Thr Leu Ile Ser Ile Leu Pro
65 70 75 80

Ser Cys Val Ile Leu Phe Leu Tyr Pro Arg Lys Arg Leu Leu Ala Leu
85 90 95

Gly Phe Ala Ser Ala Ser Trp Gly Phe Phe Leu Phe Ser Phe Gln Val
100 105 110

His Glu Lys Ser Val Leu Leu Pro Leu Leu Pro Thr Ser Ile Leu Leu
115 120 125

Cys His Gly Asn Ile Thr Thr Lys Pro Trp Ile Ala Leu Ala Asn Asn
130 135 140

Leu Ala Val Phe Ser Leu Trp Pro Leu Leu Lys Lys Asp Gly Leu Gly
145 150 155 160

Leu Gln Tyr Phe Thr Leu Val Leu Met Trp Asn Trp Ile Gly Asp Met
165 170 175

Val Val Phe Ser Lys Asn Val Leu Phe Arg Phe Ile Gln Leu Ser Phe
 180 185 190

Tyr Val Gly Met Ile Val Ile Leu Gly Ile Asp Leu Phe Ile Pro Pro
 195 200 205

Pro Ser Arg Tyr Pro Asp Leu Trp Val Ile Leu Asn Val Thr Leu Ser
 210 215 220

Phe Ala Gly Phe Phe Thr Ile Tyr Leu Trp Thr Leu Gly Arg Leu Leu
 225 230 235 240

His Ile Ser Ser Lys Leu Ser Thr Asp Leu
 245 250

<210> 92

<211> 238

<212> PRT

<213> Kluyveromyces lactis

<220>

<221> MOD_RES

<222> (88)...(99)

<223> Variable amino acid

<400> 92

Met His Arg Ile Phe Pro Phe Ala Arg Gly Ile Phe Glu Asp Lys Val
 1 - 5 10 15

Ala Asn Phe Trp Cys Val Ser Asn Ile Phe Ile Lys Tyr Arg Asn Leu
 20 25 30

Phe Thr Gln Lys Asp Leu Gln Leu Tyr Ser Leu Leu Ala Thr Val Ile
 35 40 45

Gly Leu Leu Pro Ser Phe Ile Ile Thr Phe Leu Tyr Pro Lys Arg His
 50 55 60

Leu Leu Pro Tyr Ala Leu Ala Ala Cys Ser Met Ser Phe Phe Leu Phe
 65 70 75 80

Ser Phe Gln Val His Glu Lys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 85 90 95

Xaa Xaa Xaa Tyr Thr Ser Arg Asp Trp Asn Val Leu Ser Leu Val Cys
 100 105 110

Trp Ile Asn Asn Val Ala Leu Phe Thr Leu Trp Pro Leu Leu Lys Lys
 115 120 125

Asp Asn Leu Val Leu Gln Tyr Gly Val Met Phe Met Phe Ser Asn Trp
 130 135 140

Leu Ile Gly Asn Phe Ser Phe Val Thr Pro Arg Phe Leu Pro Lys Phe
 145 150 155 160

Leu Thr Pro Gly Pro Ser Ile Ser Asp Ile Asp Val Asp Tyr Arg Arg
165 170 175

Ala Ser Leu Leu Pro Lys Ser Leu Ile Trp Arg Leu Ile Ile Val Gly
180 185 190

Ser Tyr Ile Ala Met Gly Ile Ile His Phe Leu Asp Tyr Tyr Val Ser
195 200 205

Pro Pro Ser Lys Tyr Pro Asp Leu Trp Val Leu Ala Asn Cys Ser Leu
210 215 220

Gly Phe Ser Cys Phe Val Thr Phe Trp Ile Trp Asn Asn Tyr
225 230 235

<210> 93

<211> 219

<212> PRT

<213> Arabidopsis thaliana

<400> 93

Leu Ser Arg Leu Ala Pro Phe Glu Arg Gly Ile Tyr Glu Asp Tyr Val
1 5 10 15

Ala Asn Phe Trp Cys Thr Thr Ser Ile Leu Ile Lys Trp Lys Asn Leu
20 25 30

Phe Thr Thr Gln Ser Leu Lys Ser Ile Ser Leu Ala Ala Thr Ile Leu
35 40 45

Ala Ser Leu Pro Ser Met Val Gln Gln Ile Leu Ser Pro Ser Asn Glu
50 55 60

Gly Phe Leu Tyr Gly Leu Leu Asn Ser Ser Met Ala Phe Tyr Leu Phe
65 70 75 80

Ser Phe Gln Val His Glu Lys Ser Ile Leu Met Pro Phe Leu Ser Ala
85 90 95

Thr Leu Leu Ala Leu Lys Leu Pro Asp His Phe Ser His Leu Thr Tyr
100 105 110

Tyr Ala Leu Phe Ser Met Phe Pro Leu Leu Cys Arg Asp Lys Leu Leu
115 120 125

Ile Pro Tyr Leu Thr Leu Ser Phe Leu Phe Thr Val Ile Tyr His Ser
130 135 140

Pro Gly Asn His His Ala Ile Gln Lys Thr Asp Val Ser Phe Phe Ser
145 150 155 160

Phe Lys Asn Phe Pro Gly Tyr Val Phe Leu Leu Arg Thr His Phe Phe
165 170 175

Ile Ser Val Val Leu His Val Leu Tyr Leu Thr Ile Lys Pro Pro Gln
180 185 190

Lys Tyr Pro Phe Leu Phe Glu Ala Leu Ile Met Ile Leu Cys Phe Ser
 195 200 205

Tyr Phe Ile Met Phe Ala Phe Tyr Thr Asn Tyr
 210 215

<210> 94
 <211> 252
 <212> PRT
 <213> Kluyveromyces lactis

<220>
 <221> MOD_RES
 <222> (114)..(125)
 <223> Variable amino acid

<400> 94
 Val Ser Thr Ala Leu Ala Phe Ile Gly Ser Phe Gly Pro Ile Tyr Ile
 1 5 10 15

Phe Gly Gly Tyr Lys Asn Leu Val Gln Ser Met His Arg Ile Phe Pro
 20 25 30

Phe Ala Arg Gly Ile Phe Glu Asp Lys Val Ala Asn Phe Trp Cys Val
 35 40 45

Ser Asn Ile Phe Ile Lys Tyr Arg Asn Leu Phe Thr Gln Lys Asp Leu
 50 55 60

Gln Leu Tyr Ser Leu Leu Ala Thr Val Ile Gly Leu Leu Pro Ser Phe
 65 70 75 80

Ile Ile Thr Phe Leu Tyr Pro Lys Arg His Leu Leu Pro Tyr Ala Leu
 85 90 95

Ala Ala Cys Ser Met Ser Phe Phe Leu Phe Ser Phe Gln Val His Glu
 100 105 110

Lys Xaa Tyr Thr Ser
 115 120 125

Arg Asp Trp Asn Val Leu Ser Leu Val Cys Trp Ile Asn Asn Val Ala
 130 135 140

Leu Phe Thr Leu Trp Pro Leu Leu Lys Lys Asp Asn Leu Val Leu Gln
 145 150 155 160

Tyr Gly Val Met Phe Met Val Thr Pro Arg Phe Leu Pro Lys Phe Leu
 165 170 175

Thr Pro Gly Pro Ser Ile Ser Asp Ile Asp Val Asp Tyr Arg Arg Ala
 180 185 190

Ser Leu Leu Pro Lys Ser Leu Ile Trp Arg Leu Ile Ile Val Gly Ser
 195 200 205

Tyr Ile Ala Met Gly Ile Ile His Phe Leu Asp Tyr Tyr Val Ser Pro
 210 215 220

Pro Ser Lys Tyr Pro Asp Leu Trp Val Leu Ala Asn Cys Ser Leu Gly
 225 230 235 240

Phe Ser Cys Phe Val Thr Phe Trp Ile Trp Asn Asn
 245 250

<210> 95

<211> 259

<212> PRT

<213> Homo sapiens

<400> 95

Val Lys Leu Ala Cys Ile Val Val Ala Ser Phe Val Leu Cys Trp Leu
 1 5 10 15

Pro Phe Phe Thr Glu Arg Glu Gln Thr Leu Gln Val Leu Arg Arg Leu
 20 25 30

Phe Pro Val Asp Arg Gly Leu Phe Glu Asp Lys Val Ala Asn Ile Trp
 35 40 45

Cys Ser Phe Asn Val Phe Leu Lys Ile Lys Asp Ile Leu Pro Arg His
 50 55 60

Ile Gln Leu Ile Met Ser Phe Cys Phe Thr Phe Leu Ser Leu Leu Pro
 65 70 75 80

Ala Cys Ile Lys Leu Ile Leu Gln Pro Ser Ser Lys Gly Phe Lys Phe
 85 90 95

Thr Leu Val Ser Cys Ala Leu Ser Phe Phe Leu Phe Ser Phe Gln Val
 100 105 110

His Glu Lys Ser Ile Leu Leu Val Ser Leu Pro Val Cys Leu Val Leu
 115 120 125

Ser Glu Ile Pro Phe Met Ser Thr Trp Phe Leu Leu Val Ser Thr Phe
 130 135 140

Ser Met Leu Pro Leu Leu Leu Lys Asp Glu Leu Leu Met Pro Ser Val
 145 150 155 160

Val Thr Thr Met Ala Phe Phe Ile Ala Cys Val Thr Ser Phe Ser Ile
 165 170 175

Phe Glu Lys Thr Ser Glu Glu Leu Gln Leu Lys Ser Phe Ser Ile
 180 185 190

Ser Val Arg Lys Tyr Leu Pro Cys Phe Thr Phe Leu Ser Arg Ile Ile
 195 200 205

Gln Tyr Leu Phe Leu Ile Ser Val Ile Thr Met Val Leu Leu Thr Leu
 210 215 220

Met Thr Val Thr Leu Asp Pro Pro Gln Lys Leu Pro Asp Leu Phe Ser
 225 230 235 240

Val Leu Val Cys Phe Val Ser Cys Leu Asn Phe Leu Phe Phe Leu Val
 245 250 255

Tyr Phe Asn

<210> 96
 <211> 1617
 <212> DNA
 <213> Mus musculus

<400> 96
 atgaagatga gacgctacaa gctctttctc atgttctgta tggctggcct gtgcctcata 60
 tccttcctgc acttctttaa gaccttatacc tatgtcacct tccccagaga actggccctcc 120
 ctcagcccta acctcgtatc cagcttcttc tggaaacaatg cccctgtcac tccccagggcc 180
 agtccggagc cgggtggccc cgacctattg cggacacaccc tctactccca ctctccctg 240
 ctccagccac tgcgtcccgag caaggccaca gaggaactgc accgggtgga cttcgtgttg 300
 ccggaggaca ccacggagta ttttgcgc accaaagctg gtgggtgtg cttcaaacca 360
 ggtaccagga tgctggagaa accttcgcca gggcggacag aggagaagcc cgaagtgtct 420
 gagggctcct cagccccggg acctgctcgg aggccccatga ggcacgtt gagtaacgcgg 480
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 <211> 536
 <212> PRT
 <213> Mus musculus

<400> 97
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Pro Arg Glu Leu Ala Ser Leu Ser Pro Asn Leu Ile Ser Ser Phe Phe
 35 40 45

Trp Asn Asn Ala Pro Val Thr Pro Gln Ala Ser Pro Glu Pro Gly Asp
 50 55 60

Pro Asp Leu Leu Arg Thr Pro Leu Tyr Ser His Ser Pro Leu Leu Gln
 65 70 75 80

Pro Leu Ser Pro Ser Lys Ala Thr Glu Glu Leu His Arg Val Asp Phe
 85 90 95

Val Leu Pro Glu Asp Thr Thr Glu Tyr Phe Val Arg Thr Lys Ala Gly
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Gly Val Cys Phe Lys Pro Gly Thr Arg Met Leu Glu Lys Pro Ser Pro
 115 120 125

Gly Arg Thr Glu Glu Lys Thr Glu Val Ser Glu Gly Ser Ser Ala Arg
 130 135 140

Gly Pro Ala Arg Arg Pro Met Arg His Val Leu Ser Ser Arg Glu Arg
 145 150 155 160

Leu Gly Ser Arg Gly Thr Arg Arg Lys Trp Val Glu Cys Val Cys Leu
 165 170 175

Pro Gly Trp His Gly Pro Ser Cys Gly Val Pro Thr Val Val Gln Tyr
 180 185 190

Ser Asn Leu Pro Thr Lys Glu Arg Leu Val Pro Arg Glu Val Pro Arg
 195 200 205

Arg Val Ile Asn Ala Ile Asn Ile Asn His Glu Phe Asp Leu Leu Asp
 210 215 220

Val Arg Phe His Glu Leu Gly Asp Val Val Asp Ala Phe Val Val Cys
 225 230 235 240

Asp Ser Asn Phe Thr Ala Tyr Gly Glu Pro Arg Pro Leu Lys Phe Arg
 245 250 255

Glu Met Leu Thr Asn Gly Thr Phe Glu Tyr Ile Arg His Lys Val Leu
 260 265 270

Tyr Val Phe Leu Asp His Phe Pro Pro Gly Gly Arg Gln Asp Gly Trp
 275 280 285

Ile Ala Asp Asp Tyr Leu Arg Thr Phe Leu Thr Gln Asp Gly Val Ser
 290 295 300

Arg Leu Arg Asn Leu Arg Pro Asp Asp Val Phe Ile Ile Asp Asp Ala
 305 310 315 320

Asp Glu Ile Pro Ala Arg Asp Gly Val Leu Phe Leu Lys Leu Tyr Asp
 325 330 335

Gly Trp Thr Glu Pro Phe Ala Phe His Met Arg Lys Ser Leu Tyr Gly
 340 345 350

Phe Phe Trp Lys Gln Pro Gly Thr Leu Glu Val Val Ser Gly Cys Thr
 355 360 365

Met Asp Met Leu Gln Ala Val Tyr Gly Leu Asp Gly Ile Arg Leu Arg
 370 375 380

Arg Arg Gln Tyr Tyr Thr Met Pro Asn Phe Arg Gln Tyr Glu Asn Arg
 385 390 395 400

Thr Gly His Ile Leu Val Gln Trp Ser Leu Gly Ser Pro Leu His Phe
 405 410 415

Ala Gly Trp His Cys Ser Trp Cys Phe Thr Pro Glu Gly Ile Tyr Phe
 420 425 430

Lys Leu Val Ser Ala Gln Asn Gly Asp Phe Pro Arg Trp Gly Asp Tyr
 435 440 445

Glu Asp Lys Arg Asp Leu Asn Tyr Ile Arg Ser Leu Ile Arg Thr Gly
 450 455 460

Gly Trp Phe Asp Gly Thr Gln Gln Glu Tyr Pro Pro Ala Asp Pro Ser
 465 470 475 480

Glu His Met Tyr Ala Pro Lys Tyr Leu Leu Lys Asn Tyr Asp Gln Phe
 485 490 495

Arg Tyr Leu Leu Glu Asn Pro Tyr Arg Glu Pro Lys Ser Thr Val Glu
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Gly Gly Arg Gln Asn Gln Gly Ser Asp Gly Arg Ser Ser Ala Val Arg
 515 520 525

Gly Lys Leu Asp Thr Ala Glu Gly
 530 535

<210> 98

<211> 2115

<212> DNA

<213> Homo sapiens

<400> 98

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<210> 99

<211> 535

<212> PRT

<213> Homo sapiens

<400> 99

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Ser	Phe	Leu	Thr	Leu	Ser	Trp	Tyr	Thr	Thr	Trp	Gln	Asn	Gly	Lys	Glu
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Lys	Leu	Ile	Ala	Tyr	Gln	Arg	Glu	Phe	Leu	Ala	Leu	Lys	Glu	Arg	Leu
									35			40		45	

Arg	Ile	Ala	Glu	His	Arg	Ile	Ser	Gln	Arg	Ser	Ser	Glu	Leu	Asn	Thr
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Ile	Val	Gln	Gln	Phe	Lys	Arg	Val	Gly	Ala	Glu	Thr	Asn	Gly	Ser	Lys
								65			70		75		80

Asp	Ala	Leu	Asn	Lys	Phe	Ser	Asp	Asn	Thr	Leu	Lys	Leu	Leu	Lys	Glu
								85			90		95		

Leu	Thr	Ser	Lys	Lys	Ser	Leu	Gln	Val	Pro	Ser	Ile	Tyr	Tyr	His	Leu
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Pro	His	Leu	Leu	Lys	Asn	Glu	Gly	Ser	Leu	Gln	Pro	Ala	Val	Gln	Ile
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Gly	Asn	Gly	Arg	Thr	Gly	Val	Ser	Ile	Val	Met	Gly	Ile	Pro	Thr	Val
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Lys Arg Glu Val Lys Ser Tyr Leu Ile Glu Thr Leu His Ser Leu Ile
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 Asp Asn Leu Tyr Pro Glu Glu Lys Leu Asp Cys Val Ile Val Val Phe
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 Ile Gly Glu Thr Asp Ile Asp Tyr Val His Gly Val Val Ala Asn Leu
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 Glu Lys Glu Phe Ser Lys Glu Ile Ser Ser Gly Leu Val Glu Val Ile
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 225 230 235 240
 Asp Tyr Cys Phe Leu Met Met Tyr Ala Gln Glu Lys Gly Ile Tyr Tyr
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 260 265 270
 Ile Lys Asn Phe Ala Leu Gln Leu Ser Ser Glu Glu Trp Met Ile Leu
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 Glu Phe Ser Gln Leu Gly Phe Ile Gly Lys Met Phe Gln Ala Pro Asp
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 Leu Thr Leu Ile Val Glu Phe Ile Phe Met Phe Tyr Lys Glu Lys Pro
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 Ile Asp Trp Leu Leu Asp His Ile Leu Trp Val Lys Val Cys Asn Pro
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 Glu Lys Asp Ala Lys His Cys Asp Arg Gln Lys Ala Asn Leu Arg Ile
 340 345 350
 Arg Phe Arg Pro Ser Leu Phe Gln His Val Gly Leu His Ser Ser Leu
 355 360 365
 Ser Gly Lys Ile Gln Lys Leu Thr Asp Lys Asp Tyr Met Lys Pro Leu
 370 375 380
 Leu Leu Lys Ile His Val Asn Pro Pro Ala Glu Val Ser Thr Ser Leu
 385 390 395 400
 Lys Val Tyr Gln Gly His Thr Leu Glu Lys Thr Tyr Met Gly Glu Asp
 405 410 415
 Phe Phe Trp Ala Ile Thr Pro Ile Ala Gly Asp Tyr Ile Leu Phe Lys
 420 425 430
 Phe Asp Lys Pro Val Asn Val Glu Ser Tyr Leu Phe His Ser Gly Asn
 435 440 445

Gln Glu His Pro Gly Asp Ile Leu Leu Asn Thr Thr Val Glu Val Leu
 450 455 460

Pro Phe Lys Ser Glu Gly Leu Glu Ile Ser Lys Glu Thr Lys Asp Lys
 465 470 475 480

Arg Leu Glu Asp Gly Tyr Phe Arg Ile Gly Lys Phe Glu Asn Gly Val
 485 490 495

Ala Glu Gly Met Val Asp Pro Ser Leu Asn Pro Ile Ser Ala Phe Arg
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Leu Ser Val Ile Gln Asn Ser Ala Val Trp Ala Ile Leu Asn Glu Ile
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His Ile Lys Lys Ala Thr Asn
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<210> 100

<211> 3226

<212> DNA

<213> *Mus musculus*

<400> 100

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<210> 101

<211> 740

<212> PRT

<213> Mus musculus

<400> 101

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									20		25		30		

Thr	Ile	Gln	Gln	Arg	Thr	Gln	Pro	Glu	Ser	Ser	Ser	Met	Leu	Arg	Glu
									35		40		45		

Gln	Ile	Leu	Asp	Leu	Ser	Lys	Arg	Tyr	Ile	Lys	Ala	Leu	Ala	Glu	Glu
									50		55		60		

Asn	Arg	Asp	Val	Val	Asp	Gly	Pro	Tyr	Ala	Gly	Val	Met	Thr	Ala	Tyr
									65		70		75		80

Asp	Leu	Lys	Lys	Thr	Leu	Ala	Val	Leu	Asp	Asn	Ile	Leu	Gln	Arg
									85		90		95	

Ile	Gly	Lys	Leu	Glu	Ser	Lys	Val	Asp	Asn	Leu	Val	Asn	Gly	Thr	Gly
									100		105		110		

Ala	Asn	Ser	Thr	Asn	Ser	Thr	Thr	Ala	Val	Pro	Ser	Leu	Val	Ser	Leu
									115		120		125		

Glu	Lys	Ile	Asn	Val	Ala	Asp	Ile	Ile	Asn	Gly	Val	Gln	Glu	Lys	Cys
									130		135		140		

Val	Leu	Pro	Pro	Met	Asp	Gly	Tyr	Pro	His	Cys	Glu	Gly	Lys	Ile	Lys
									145		150		155		160

Trp Met Lys Asp Met Trp Arg Ser Asp Pro Cys Tyr Ala Asp Tyr Gly
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 Val Asp Gly Thr Ser Cys Ser Phe Phe Ile Tyr Leu Ser Glu Val Glu
 180 185 190
 Asn Trp Cys Pro Arg Leu Pro Trp Arg Ala Lys Asn Pro Tyr Glu Glu
 195 200 205
 Ala Asp His Asn Ser Leu Ala Glu Ile Arg Thr Asp Phe Asn Ile Leu
 210 215 220
 Tyr Gly Met Met Lys Lys His Glu Glu Phe Arg Trp Met Arg Leu Arg
 225 230 235 240
 Ile Arg Arg Met Ala Asp Ala Trp Ile Gln Ala Ile Lys Ser Leu Ala
 245 250 255
 Glu Lys Gln Asn Leu Glu Lys Arg Lys Arg Lys Lys Ile Leu Val His
 260 265 270
 Leu Gly Leu Leu Thr Lys Glu Ser Gly Phe Lys Ile Ala Glu Thr Ala
 275 280 285
 Phe Ser Gly Gly Pro Leu Gly Glu Leu Val Gln Trp Ser Asp Leu Ile
 290 295 300
 Thr Ser Leu Tyr Leu Leu Gly His Asp Ile Arg Ile Ser Ala Ser Leu
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 325 330 335
 Cys Pro Thr Val Gly Asp Arg Ile Val Glu Leu Ile Tyr Ile Asp Ile
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 Tyr Gln Cys Met Leu Arg Val Leu Asp Ser Phe Gly Thr Glu Pro Glu
 370 375 380
 Phe Asn His Ala Ser Tyr Ala Gln Ser Lys Gly His Lys Thr Pro Trp
 385 390 395 400
 Gly Lys Trp Asn Leu Asn Pro Gln Gln Phe Tyr Thr Met Phe Pro His
 405 410 415
 Thr Pro Asp Asn Ser Phe Leu Gly Phe Val Val Glu Gln His Leu Asn
 420 425 430
 Ser Ser Asp Ile His His Ile Asn Glu Ile Lys Arg Gln Asn Gln Ser
 435 440 445
 Leu Val Tyr Gly Lys Val Asp Ser Phe Trp Lys Asn Lys Lys Ile Tyr
 450 455 460

91/93

Leu Asp Ile Ile His Thr Tyr Met Glu Val His Ala Thr Val Tyr Gly
465 470 475 480

Ser Ser Thr Lys Asn Ile Pro Ser Tyr Val Lys Asn His Gly Ile Leu
485 490 495

Ser Gly Arg Asp Leu Gln Phe Leu Leu Arg Glu Thr Lys Leu Phe Val
500 505 510

Gly Leu Gly Phe Pro Tyr Glu Gly Pro Ala Pro Leu Glu Ala Ile Ala
515 520 525

Asn Gly Cys Ala Phe Leu Asn Pro Lys Phe Asn Pro Pro Lys Ser Ser
530 535 540

Lys Asn Thr Asp Phe Phe Ile Gly Lys Pro Thr Leu Arg Glu Leu Thr
545 550 555 560

Ser Gln His Pro Tyr Ala Glu Val Phe Ile Gly Arg Pro His Val Trp
565 570 575

Thr Val Asp Leu Asn Asn Arg Glu Glu Val Glu Asp Ala Val Lys Ala
580 585 590

Ile Leu Asn Gln Lys Ile Glu Pro Tyr Met Pro Tyr Glu Phe Thr Cys
595 600 605

Glu Gly Met Leu Gln Arg Ile Asn Ala Phe Ile Glu Lys Gln Asp Phe
610 615 620

Cys His Gly Gln Val Met Trp Pro Pro Leu Ser Ala Leu Gln Val Lys
625 630 635 640

Leu Ala Glu Pro Gly Gln Ser Cys Lys Gln Val Cys Gln Glu Ser Gln
645 650 655

Leu Ile Cys Glu Pro Ser Phe Phe Gln His Leu Asn Lys Glu Lys Asp
660 665 670

Leu Leu Lys Tyr Lys Val Thr Cys Gln Ser Ser Glu Leu Tyr Lys Asp
675 680 685

Ile Leu Val Pro Ser Phe Tyr Pro Lys Ser Lys His Cys Val Phe Gln
690 695 700

Gly Asp Leu Leu Leu Phe Ser Cys Ala Gly Ala His Pro Thr His Gln
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Arg Ile Cys Pro Cys Arg Asp Phe Ile Lys Gly Gln Val Ala Leu Cys
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Lys Asp Cys Leu
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<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Illustrative
retention signal peptide

<400> 102

Lys Asp Glu Leu
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<210> 103

<211> 60

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 103

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<210> 104

<211> 58

<212> PRT

<213> *Drosophila virilis*

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Leu Pro Phe Phe Leu Cys Asn Phe Ile Gly Val Ala Cys Ala Arg Ser
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<210> 105

<211> 60

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 105

Ile Pro Phe Val Leu Ile Ala Ser Asn Phe Ile Gly Val Leu Phe Ser
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Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro
20 25 30

Ile Leu Ile Phe Trp Ser Gly Met Pro Phe Phe Val Gly Pro Ile Trp
35 40 45

Tyr Val Leu His Glu Trp Cys Trp Asn Ser Tyr Pro
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<211> 59

<212> PRT

<213> Drosophila melanogaster

<400> 106

Leu Pro Phe Phe Leu Cys Asn Leu Val Gly Val Ala Cys Ala Ser Arg
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Ser Leu His Tyr Gln Phe Tyr Val Trp Tyr Phe His Ser Leu Pro Tyr
20 25 30

Leu Ala Trp Ser Thr Pro Tyr Ser Leu Gly Val Arg Cys Leu Ile Leu
35 40 45

Gly Leu Ile Glu Tyr Cys Trp Asn Thr Tyr Pro
50 55